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# TRANSACTIONS

OF THE

## AMERICAN ENTOMOLOGICAL SOCIETY.

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### VOLUME XXXIII.

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#### NEW NORTH AMERICAN TORTRICIDÆ.

BY W. D. KEARFOTT.

##### ***Evetria monophylliana*** sp. nov.

Expanse 15-19 mm.

Head: whitish-gray, mixed with brown and reddish scales; palpi light brownish-fuscos; thorax whitish-gray, striped with shades of brown and bright red scales; antennæ light gray; abdomen missing on all four specimens; legs whitish, dusted with fuscous.

Forewing: white on the basal fourth and upper half from base to outer third, the ground color of the lower half, beyond the basal fourth and the apical third is a light pinkish-fawn or salmon. There are two transverse irregular bands of scattered fuscous-brown scales on basal fourth, with a few salmon dots in middle of the outer. There is a broad fuscous-brown fascia, more or less overlaid with salmon from middle of costa, through white ground color only, stopping at the salmon color. On each side of this the costa, in the white area, is evenly dotted with four or five fuscous-brown streaks. Above the salmon of the outer third the costa is narrowly white, on which are two groups of fuscous-brown scales, below each the salmon shade is more intense, of a coppery hue. Extreme edge of dorsum white, dotted with brown. Before a white preciliate line the termen is edged with bright red, slightly enlarged and mixed with a few blackish scales in the middle. Cilia inwardly red, outwardly pink, with a few scattered gray scales.

Hindwing: pale gray, cilia white, with a gray basal line; underside whitish, dusted with fuscous in apex, cilia white.

Underside forewing: grayish fuscous, two large white costal spots before apex, cilia leaden, with whitish basal line.

Four specimens from collections U. S. Nat. Mus. Bearing labels "On *Sinus monophylla*;" Coso Valley, May 91, K;" "Argus Mts., May 91, K." In the Century Atlas both Coso Valley and Argus Mountains are shown in Kern Co., Cal.

Cotypes in U. S. Nat. Mus. and my collection.

**Evetria sabiniana** sp. nov.

Expanse 22-23 mm.

Head: whitish, tinged with salmon on sides; palpi white, lightly tinged with pink on sides; thorax white, mottled with salmon; antenna light salmon; abdomen white, anal tuft yellowish; legs salmon, thinly banded and dusted with white.

Forewing: salmon, with a broad white fascia across middle of wing and a narrower white fascia across wing at outer third. The white fasciæ are edged with shining scales, and a short line of the same cross wing before apex. These shining scales are white in the fasciæ and salmon elsewhere. The outer fascia is forked at costa, enclosing a small dot of salmon, between it and apex are two other obscure white costal dots. In the middle of wing at base is a streak of scales that are more of a pink shade than the salmon. Cilia white.

Hindwing: pale straw color, cilia white; underside the same, but darker below costa. Underside forewing ochreous yellow, dotted with white on costa, cilia white.

One specimen from collections U. S. Nat. Mus., bearing labels, "Sacramento Co., Cal.," "Augt. 9, '85," "3820," "43," "Larva on *Pinus sabiniana*," and a label in Walsingham's handwriting "*Steganoptica* n. sp. allied to *sinicolana* and *buolana* of Europe, left wings to W. 186."

One specimen from J. G. Grundel, Santa Clara, Cal., emerged from pine gum, June 20, 1904. This last specimen is darker than the first; the head, palpi, and thorax are shades of pinkish brown; the forewing is also more of a brownish pink, but the fasciæ, shining scales, and other marks are the same in both.

Cotypes in the U. S. Nat. Mus. and my collection.

**Evetria zozana** sp. nov.

Expanse 20 mm.

Head: pale fawn, mixed salmon, collar pale straw color; palpi very pale fawn within, speckled with light fuscous, externally reddish-salmon; antenna gray; thorax reddish-salmon in front and base of patagia, the balance gray, speckled with white; abdomen fuscous; legs speckled, cinereous gray and white.

Forewing: inner two-thirds white, heavily reticulated with blackish fuscous, somewhat concentrated in two darker fascia at inner fourth and middle, the latter is overlaid with dull ochreous scales on lower two-thirds. The outer third is reddish, divided by a whitish-pink fascia composed of a large spot below costa and another one above anal angle. The inner half of this reddish area is overlaid with dull ochreous on lower half; the outer portion, outlining termen, is intense red and forms a narrow fascia which is enlarged a third below costa and continuous to costa before apex as an ochreous streak. Beyond the red terminal band is a narrow white precliate line. The cilia are pinkish, with a speckled white and gray line dividing this color below apex and superceding the pink at the anal angle.

Hindwing: smoky fuscous, darker at apex, cilia fuscous, with a darker line at base and a lighter line beyond.

Underside paler than upper. Underside forewing smoky fuscous, cilia paler, preceded by a white basal line, and with the ends of the pink scales overlapping on upper half.

One specimen, Placer Co., Cal., April 20; collected by Arthur H. Vachell.

Type in my collection.

***Evetria colfaxiana* sp. nov.**

Expanse 22 mm.

Head and thorax whitish, mixed with black scales; palpi fawn, outer joint dark brown; antennæ gray; abdomen gray, annulated with dark fuscous; anal tuft pale fawn; legs pale fawn, dusted with fuscous.

Forewing: whitish gray. Base narrowly black, mottled with gray, succeeded by a whitish gray fascia, narrow on costa, broad on dorsum, followed by a broader dark fascia, black only on edges, overlaid in middle with gray, and above this a streak of ochreous; the outer line of this fascia is from costa at outer fourth, obliquely straight to fold, then concave to dorsum at inner third. Beyond this the ground color predominates, with a triangular spot on dorsum, at anal angle, sending a line of black scales from its upper end to costa at outer fourth, below costa this line connects with another shorter one which goes outside of ocellus. The broad whitish gray middle area is transversed by two, wide apart, lines of black scales, and lightly mottled with darker gray; through the middle of cell and below fold are horizontal streaks of yellowish. The ocellus is a flattened oval, long axis vertical, of whitish shining scales, enclosing a vertical line of shining ochreous. Beyond it the apex is coppery yellow. There are five black and four whitish spots on costa beyond middle, the inner two join together below, making a large quadrate dark shade, from the fourth dark spot descends the line of black scales above mentioned and from the fifth a similar black line divides the coppery shade. All of these dark spots are overlaid in the middle with coppery brown. Cilia pale gray, mottled with fuscous.

Hindwings: fuscous, cilia whitish; underside gray, dotted with dark fuscous on costa. Underside forewings dark fuscous, mottled with black; costal spots repeated.

One specimen, Colfax, Placer Co., Cal., July; collected by Arthur H. Vachell.

***Evetria pasadenana* sp. nov.**

Expanse 15-19 mm.

Head: reddish-ochreous; palpi creamy-ochreous inside, dark reddish outside; antenna fuscous; thorax fuscous gray, patagia reddish at base and tipped with grayish-white; abdomen light brownish fuscous; legs grayish-white, banded and powdered with dark brown.

Forewing: gray, overlaid with reddish-brown scales, becoming more red in outer third. There are five transverse geminate paler gray lines, at about equal distance apart, the outer, before apex, reaches only to middle of wing; where each touches costa is a paler dot. The terminal line is white, sending dashes of same color into cilia, over each vein, below apex; before this white line is a



darker red shade from apex to anal angle, enlarged at the middle of the wing, it is continued as a red spot on dorsum before angle, above this in middle of wing is a clear red spot and a less distinct one above it on costa. Cilia gray, shaded with ferruginous at apex.

Hindwing: grayish-fuscos, cilia same, divided by a slightly darker line close to base; underside the same, but cilia whiter. Underside forewings smoky fuscous, reddish at apex.

Three specimens, Pasadena, Cal., April 14, W. G. Dietz; Alameda Co., Cal., March; Carmel-by-the-Sea, Monterey Co., Cal., A. H. Vachell.

***Evetria burkeana* sp. nov.**

Expanse, ♂, 26-28 mm.

Head: with short tuft above eyes and between antennæ, face flattened, small, with thorax whitish-gray, thickly dotted with fuscous-brown; "griseous." Eyes jet black, with irregular lines of reddish-brown. Palpi, basal and second joint with moderate flattened tuft above and below, increasing slightly in width to end of second joint, same color as head; third joint obtusely pointed, about half length of second and not concealed by tufts of second, black, except base, which is paler. Antennæ, basal joint enlarged, whitish, with a streak of black in front; outer joints shortly ciliated below, pale fuscous, length about one-half. Abdomen dark fuscous above and below, scales overlapping posterior edge of each segment pale cinereous; a slight ridge of same color on each side, anal tufts same. Legs whitish, first and second pairs rather heavily clouded with dark brown on femora and tibiæ, and all tarsi heavily annulate with brown.

Forewing: white, with numerous transverse lines and fasciæ of gray-brown. A broad fascia from costa to dorsum; with its inner edge on costa at middle and outer edge at three-quarters; on dorsum, inner edge at two-thirds and outer edge at angle; the inner edge is much indented below upper vein of cell by a rounded prominence of white which nearly divides it; below this, above dorsum is a similar but less deep indentation; the outer edge of fascia is nearly straight, but much broken and indented. Before the fascia, to base, the surface is rather evenly strigulated with black and white, with the following more prominent markings; below middle on dorsum from inner third to inner sixth an irregular dark blotch, its outer edge with two rounded projections (which are parallel to corresponding indentation in fascia); between this blotch and fascia the color is more white than black, making an illy-defined whitish fascia before the dark one and at about equal width; on costa, before dark fascia, are four geminated white streaks, only the two outer ones (in whitish fascia) are well defined. Apical fifth of wing above ocellic space grayish-brown, with a narrow line continuing down to anal angle, between this and dark fascia is a narrow fascia of white, strigulated with dark lines from costa to outer margin above angle. The apex is dark, with a preciliate paler line; before apex the costa is marked with five prominent black dots, the outer two of which are on outer white fascia and inner three on middle dark fascia. Cilia blackish, interrupted by four white dots below apex and three larger white dots around angle. The blackish lines and fascia are, of the forewing, all more or less overlaid with gray, giving less the appearance of black and white than of grayish-brown and white.

Hindwing: pale, smoky fuscous, cilia paler, with a darker then a lighter line.

Underside forewing very dark smoky fuscous above lower median vein, white below it; costa and cilia dotted evenly with white.

Underside hindwing whitish, costal half shaded and reticulated with fuscous, cilia same, with fuscous dashes at ends of veins.

Two males, Hoquiam, Washington, bred by Mr. Burke, from *Picea sitchensis*, and bearing Division of Forestry record label "4009-9<sup>1</sup> and 4009-9<sup>2</sup> Hopk. U. S."

Cotypes U. S. Nat. Mus. and in my collection.

***Polychrosis aruncana* sp. nov.**

Expanse 8.5-11 mm.

Head and palpi clay-yellow, latter tinged with brown on outside of tufts and former with brown behind. Thorax clay-brown, thickly dotted with darker brown, tuft leaden-black. Abdomen fuscous, anal tuft and legs clay-yellow, latter dusted and annulate with brown.

Forewing: inner third pale grayish-blue, divided by a brown band from costa, which reaches only to upper edge of cell. Costa within this space marked with three black spots, edged on both sides with white. The central fascia is narrowest on costa at middle, its inner edge goes vertically to dorsal margin, its outer edge obliquely to anal angle. The flattened oval brown patch in apical fourth sends two spurs to costa, another from outer edge to termen and which follows termen to angle, and coalesces with the central fascia at angle. These brown areas are overlaid with black on upper half of wing, and with three horizontal black lines in the flattened oval, beyond the end of cell with shining golden ochreous on lower half. There are four geminate white spots on costa between middle and apex, from each extends below costa pale metallic-blue streaks, the inner one extends across the brown fascia to dorsum, but is separated into three spots by the brown color. The apical and the one before it send oblique streaks to termen. A line of the same scales borders lower half of termen. Cilia leaden blue, with two tiny dashes of white on outer ends of the cilia below apex.

Hindwing: dark smoky brown, cilia white outwardly; underside grayish-brown.

Underside forewing smoky brown, costal spots repeated.

Eight specimens, from Prof. C. H. Chittenden, in charge of breeding experiments at the Department of Agriculture, Washington, D. C., bred from larvæ on *Aruncus aruncus*. Record number 9215. Cabin John's Bridge, Md., issued May 10 to 21, 1900.

Can be distinguished from any other species in this genus by the golden yellow patches.

***Polychrosis yaracana* sp. nov.**

Expanse 9-10.5 mm.

Palpi and head pale creamy-brown, a shade darker on outside of tufts of former and collar of latter. Antennæ the same color. brown between joints. Thorax same shade of brown as collar, tufts cinnamon-brown. Abdomen whitish-gray, ringed with fuscous-brown between each segment, tuft gray, tinged with yellow and speckled above with brown. Legs white annulate and dusted with brown.

Forewing: a conspicuous black spot rests on costa between inner third and middle, and as a central fascia continues to fold, but becomes brown below the middle of the wing; its inner edge is slightly oblique to middle of wing, then vertical towards dorsum, but before reaching latter it turns and the outer margin runs obliquely upward in a spur to the middle of wing; the brown of this spur is shaded with black and above the spur is a white semi-circular patch containing on its lower side a small dot of fuscous. Between base and this dark fascia the ground color is white, with three, nearly equidistant black lines from costa to middle of wing; the middle one inwardly outlines a pale brown fascia extending nearly to dorsum; the inner fourth of dorsal margin, below the fold, is overlaid with brown and black scales; and a few scales of the same colors mark the base above. The white ground color, inside the middle fascia, is heavily overlaid with gray on the upper half of wing, and a patch of the same on lower half just before fascia; along the dorsum the white extends beyond the fascia, nearly to outer fourth rather heavily overlaid with gray at the outer end. Beyond the dark central fascia is a large olivaceous brown patch, extending from below costa to anal angle, rounded on its outer edge and nearly straight in its inner. A line of steely-gray scales separate it from a smaller triangular patch of the same color, in dorsum, within anal angle; the steely-gray line continues to costa at outer fourth, but becomes white above the middle of wing, where it joins another white line from costa, which runs obliquely outward to middle of termen, a similar white streak from costa, before apex, runs into this at middle of termen. The latter is interrupted by a streak of black scales below apex, and both of these white lines are outlined with gray scales. A similar but shorter white line separates the brown patch from termen above the angle. In apex is a lunate patch of brown overlaid with black. Cilia leaden-gray, interrupted below apex and at middle by a whitish dash, and few scales of whitish at angle.

Hindwing: white, tinged with smoky-brown in apex and before margin. Outer ends of cilia white, shaded with pale brown within. Underside the same.

Underside forewing fuscous, with eight geminate white spots on costa, cilia dark leaden-gray.

Five specimens, collected at Cincinnati, Ohio, by Miss Annette F. Braun, April 29th to May 14th.

This species is nearer to the European *P. botrana* than any of the American species I have seen.

### ***Polychrosis magnoliana* sp. nov.**

Expanse, ♂, 11.5 mm.; ♀, 12 mm.

Head, palpi, antennæ and thorax cinnamon-brown, thorax streaked with leaden-black before the tuft, and the outer ends of tuft reddish-brown. Abdomen fuscous, anal segment leaden, tuft ochreous. Legs creamy-white, powdered with blackish-brown.

Forewing: inner half leaden-blue, divided by a narrow transverse line, which is bluish above and brown below middle. The middle fascia extends from costa to dorsum, its inner edge nearly straight and vertical; it is narrow to middle, then broadens outwardly to double the width, and from the widest outward point curves inwardly to dorsum, where it is less wide than at costa; black above,

brown below middle of wing, and outlined by ochreous-brown scales. Just above the outer limb of fascia and at about the end of the cell is a conspicuous round spot of bright ochreous yellow, from the upper edge of which an ochreous streak goes obliquely towards costa. Above this is a small black quadrate patch on costa with a streak of blue separating it from the middle fascia. A flattened oval patch of brown occupies the most of the apical fourth, with a smaller rounded patch of same color on dorsum before angle; these brown patches are outlined with shining leaden-gray scales. A similar lunate patch occupies the extreme apex, brown, dotted with black. On the outer fourth of costa are three geminate ochreous dots. Cilia mottled ochreous-brown, with a dash of leaden below apex and at middle.

Hindwing: very dark smoky brown, cilia whitish, paler within. Underside fuscous, with a yellowish streak above cell.

Underside forewing dark smoky brown, with costal dots repeated, cilia brown with two leaden dashes in termen, below apex, and leaden above apex and at angle angle.

Five specimens, bred from larvæ in the leaves of swamp magnolia. Bennings Station, District of Columbia, and Moorestown, N. J. Pupated August 1-7; issued August 10-20.

Nearest to *P. liri dendrana*, but can be at once separated by the conspicuous yellow dot at the end of cell, which can be easily seen without the use of a lens.

***Polychrosis vernoniana* sp. nov.**

Expanse 9-11 mm.

Head: light brown, pale fawn in front; palpi pale fawn within, dark brown outside; antenna fuscous; thorax coppery brown, with a middle and two lateral black stripes, tuft ferruginous; abdomen fuscous; legs whitish, dusted with brown.

Forewing: pale bluish-gray. A large triangular fascia in middle of wing, the inner edge nearly a straight vertical line from costa to dorsum, the outer edge from costa curves outward and upward to end of cell, thence obliquely inward to dorsum. In the outer fourth is a large brown spot, touching anal angle below, and the costal edge above. At anal angle between these two is a small triangular brown spot. All of these three fasciæ and spots have horizontal black lines running through them. Above the outer limb of the fascia and the terminal spot, the space below costa is covered with ochreous brown scales mottled with darker brown. The costa is marked with fine line and dashes from base to apex. In the apex is an ocellated brown spot. The bluish, slightly shining ground color in this species is in well-defined bands; before the middle a narrow transverse band, between which and base is another of same width but more obscure. A narrow band surrounds the large terminal spot, except where the latter touches middle of termen, this band sends a spur into costa and into dorsal margin. Cilia blackish above, brown at angle angle, with a bluish reflection.

Hindwing: dark smoky brown, cilia white outwardly; underside a shade paler.

Underside forewing smoky fuscous, with eight or nine dull ochreous geminate spots on costa.

Twenty-one specimens, all bred from larvæ feeding in the flower heads and young seeds of *Vernonia noveboracensis*, Caldwell, N. J.; issued August 4th to 10th; District of Columbia, July 28th to August 7th; Dept. Agri., No. 3557, issued May 22d.

***Polychrosis ambrosiana* sp. nov.**

Expanse 9-11 mm.

Head: pale fawn in front, darker over eyes and above; palpi very pale fawn, a shade darker on outside and apex; antenna brownish fuscous, becoming dark gray at outer end; thorax mottled, ochreous brown, black in centre; abdomen smoky black, anal tuft whitish above, cinereous beneath; legs very pale fawn, banded and dusted with fuscous.

Forewing: dull bluish gray, with a transverse brown band from middle of costa to anal angle, narrow and blackish brown on upper half, widest and lightest brown on lower half; an oblique line of the bluish ground color crosses this band on lower half of wing, cutting off a triangular spot on the dorsal margin. There is a narrow light brown fascia, mottled with darker brown close to base, and a finer darker line before this; a large patch of fawn-brown, mottled with darker brown covers apical part of wing, separated from the brown ocellate apical spot by a crescent-shape line of bluish-gray. This patch, by a darker brown shade, forms a large lunate spot in middle of wing before termen, which sends a long spur into termen at middle, another into anal angle, and in upper end is connected with the fawn-brown streak along costa. The costal edge is fawn-brown, with fine lines and dashes of darker brown and black. Cilia blackish-fuscous, becoming brown at anal angle.

Hindwing: smoky fuscous, cilia whitish.

Underside both wings dark silvery-gray, costa dotted with pale fawn.

Fifteen specimens, bred from larvæ feeding in the seeds of *Ambrosia trifida*, from Cincinnati, Ohio, forwarded by Miss Annette F. Braun, and one specimen bred many years ago from the same seeds by Miss Mary E. Murtfeldt, at Kirkwood, Mo. Larvæ were full fed and pupating from Aug. 10th to 20th; moths issued Aug. 20th to Sept. 10th. There is a later brood which hibernate in the seeds as larvæ. I have one flown specimen from Miss Braun, captured May 14th.

***Olethreutes gogana* sp. nov.**

Expanse 20 mm.

Head: dark fuscous; palpi dark fuscous, black outwardly, pale ochreous at base and underside of head; antenna dark fuscous; thorax black, patagia and posterior end streaked with reddish-brown; abdomen light fuscous, with long lateral tufts, anal tuft cinereous; legs cinereous dusted with black.

Forewing: dusky black, with obscure grayish-white shining fascia and spots. The most prominent is from inner fourth of costa to inner third of dorsum, broader on dorsal margin. There are two narrower bands from beyond middle of costa to dorsum of anal angle. There are three flattened spots under the costa

between the twin fasciæ and apex, and a streak from below the middle one to termen at middle, then to anal angle. In the apex is a large rounded spot of ochreous, all of the spots in apical third of wing contain ochreous scales; and a sprinkling of same over the balance of the wing. Cilia shining fuscous, preceded by an ochreous line.

Hindwing: smoky gray, cilia light gray; underside same. Underside hindwing a shade darker, costal spots repeated, and an ochreous preciliate line.

One ♂ specimen, Wellington, B. C., April 4th, collected by G. W. Taylor.

***Olethreutes galaxana* sp. nov.**

Expanse 21 to 23 mm.

Head: ochreish-brown, mixed with black scales; palpi same shade of brown outside, paler inside, with a few scales at outer end of tuft, and apical joint black; antenna shining yellowish-gray; thorax black, thickly speckled with ochreish-brown, and tips of patagia same color; abdomen blackish-fuscous, posterior edge of each segment pale yellowish-white, anal tuft pale ochreous; legs fuscous black, thinly ringed and dusted with pale ochreous.

Forewing: pale ochreous-brown or light fawn, with basal patch, middle and outer fascia black, the dark areas outlined by shining steel-blue metallic scales.

The dark basal area is more or less overlaid with brown scales; it reaches to inner sixth on costa, is widest above middle of wing, is sharply indented below middle. The middle dark fascia is, from costa before middle, as a flattened ovate spot to below cell; to its inner, lower edge is joined a similar but smaller spot which completes the fascia to dorsal margin. The outer fascia begins at outer fourth of costa as a small spot on costa, enlarges immediately below costa, and, as a large, flattened ovate spot, extends nearly to termen above anal angle and fills more than half the area beyond cell. Below it, and separated only by the metallic line, is a rounded dark spot on dorsum before anal angle. The costa in the dark basal area is lightly speckled with brown, between this and middle fascia with three geminate brown and black dots, in the outer half with four geminate brown spots, becoming whitish on entering edge of costa. The four lines of metallic scales in outer half of wing begin at these germinate spots. A narrow apical area beyond the last metallic line is black, overlaid with brown. Cilia shining leaden.

Hindwing: Grayish-fuscous; cilia shining, lighter fuscous, with a darker line near base; underside, both wings, same as upper side of hindwing. Costal spots repeated.

Three specimens, Vernon, B. C., April 13th and May 18th, Victoria, B. C.

***Olethreutes glitranana* sp. nov.**

Expanse 15 to 17 mm.

Head: pale fawn, mixed with black; palpi, pale fawn, shaded with black outside, apical joint blackish; antenna pale fawn; thorax blackish-fuscous, edged with pale fawn; abdomen black, each segment posteriorly edged with white; tuft light ochreous; legs light ochreous, banded and dusted with black.

Forewing: two distinct, narrow creamy-ochreous, clouded with pale brown fasciæ, the inner at inner third and outer at outer third on a ground color of black rather heavily covered with light reddish-brown scales, the latter thicker in api-

cal third. The inner pale fascia form two geminate spots on costa; from the inner a broken line of steel-blue metallic scales, starting on the inside edge of fascia, crosses it, and on lower half outlines the outer edge; from the outer geminate spot a short line of metallic bounds the outer edge of fascia. There are two similar geminate spots and metallic lines from outer pale fascia; the inner line is much broken, but in dots outlines the inner edge of fascia; the outer metallic line follows outer edge of fascia to middle, then goes nearly to anal angle, but does not connect with a small group of metallic scales at that point. There are two geminate costal spots before apex, from the inner a metallic line margins termen nearly to anal angle; from the outer a short metallic line defines a darker apical spot; between these lines is a streak or narrow fascia of reddish-brown. There is a blackish preciliate line preceded by an irregular mottled line. The cilia is shining leaden at apex, cream color below, with dashes of brownish-fuscous in middle of wing and outwardly edged with this color below middle.

Hindwing: smoky, dark brown; cilia cream-white with a fuscous basal line; underside the same, but somewhat mottled with pale fawn; underside forewing smoky, dark brown; costal dots repeated.

Ten specimens, Aweme, Manitoba, June 39th to July 5th, Norman Criddle; Regina, Assa., July 2d, T. N. Willing; Winnipeg, Man., A. W. Hanham.

***Olethreutes coronana* sp. nov.**

Expanse 16 to 19 mm.

Head: pale fawn, mixed with a few black scales on top; palpi pale fawn, blackish on outer end of tuft and with a black dot above on outside of second and first joints; antenna whitish-fawn; thorax fawn in which black is mixed; ends of patagia paler fawn; abdomen blackish-fuscous, posteriorly each segment edged with whitish; anal tuft yellowish-ochreous, darker at base; legs dark cream, banded and powdered with blackish-brown.

Forewing: pale olivaceous brown or light fawn, mottled with black and crossed by a number of steely-blue metallic lines. The black scales are closer together forming a dark fascial shade across wing at middle; inner edge straight, outer edge rounded; its width at middle is half the width of wing. A similar but less distinct dark shade beyond end of cell, starting from the two middle of the four geminate costal spots on outer half; its inner edge slightly concave to dorsal margin, its outer edge sweeping around before termen. The paler fascia between these is narrower than the outer dark fascia, and is divided at its lower third, sending a branch to anal angle and one to outer fourth of dorsum, and enclosing in the fork a triangular darker spot. The metallic irregularly separates these lighter and darker areas. A short metallic line from costa before apex outlines a small brown spot. Cilia cream-white with a small spot of fuscous in apex, and similar dashes at ends of veins 3, 4, and 5.

Hindwing: cream-white, lightly dotted with brownish-fuscous around margin, and veins 6 and 7 overlaid with same color beyond the cell; cilia whitish with a darker basal line; underside the same with less brown scales. Underside forewing olivaceous brown, mottled with yellowish-white before termen and costal spots repeated in same color.

Three specimens, Aweme, Man., July 9th and 31st, Norman Criddle; Beulah, Man., Aug. 15th, A. J. Dennis.

**Olethreutes rosaschreana** sp. nov.

Expanse 12.5 to 14 mm.

Head: dark rose, tinged with ochreous behind, and the frontal scales tipped with black; palpi dark rose, ochreous within; antenna grayish-fuscous; thorax dark rose, ochreous in centre; abdomen silvery-fuscous; legs cream-white dusted with dark brown.

Forewing: above fold dark rose, below fold orange-ochreous, except at extreme base and at outer end, where the ochreous merges into the prevailing rose color. There is a shining patch of paler rose on upper third of wing between base and middle; the upper edge of this merges into ochreous on costa. There is a similar patch of paler shining rose scales in the ocellic area; it follows termen from lower third around angle to outer fifth of dorsum; its upper edge nearly reaches middle of wing, and sends a rounded process inward before curving downward and outward to dorsum; near its upper edge are a few metallic scales. Between this patch and the ochreous dorsal patch there is a blackish-rose shade along outer third of fold. On the costa between inner third and apex are five geminate, very oblique yellowish streaks, the inner is in the light rose shining patch; from the streak in middle of wing is a long streak of shining rose paralleling costa and curving gradually before apex and termen, ending in the latter below middle. This shining streak is bounded inwardly by a broader streak of dull rose. Between the shining streak and apical margin, including upper half of termen, the interspaces between veins dull ochreous, and the dull rose over the veins is outwardly lightly strigulated with whitish-yellow. Before the black preciliate line is a line of dull rose shaded with black over veins. Near the outer end of cell are two spots of leaden fuscous, the smaller near upper edge and larger near lower edge of cell. Cilia rose, becoming gray at anal angle and touched with blackish at end of each vein.

Hindwing: dull, smoky brown; cilia same, but shining, with a darker basal line; underside, both wings the same.

Six specimens, Florida, from Prof. Fernald's collection. Cotypes in his and my collection.

The wing coloration of this species is allied to *Malachitana* Lell.

**Olethreutes ochromediana** sp. nov.

Expanse 11.5 to 12 mm.

Head: mixed ochreous and black, paler ochreous in front and base of antenna; palpi pale ochreous, two black spots on outside of second joint; apical joint black; antenna grayish-fuscous; thorax ochreous, patagia and posterior tuft blackish-fuscous; abdomen grayish-fuscous, anal tuft pale yellow; legs creamy-white dusted with dark fuscous.

Forewing: basal area and apical third mottled black, ochreous and shining blue lines. The middle of the wing is covered by a broad ochreish fascia, commencing as a narrow spot on costa but swelling out below and covering half the dorsum. Its inner edge begins on costa at inner third, is nearly straight for a third the width of wing, then curves convexly to dorsum at inner fourth; the outer edge begins close beyond the inner edge, curves convexly to dorsum at outer fourth; it is dentate, sending out spurs at upper fourth, middle, and lower



third. Between the fascia and base is an ochreous costal spot that sends a line to dorsum, but is interrupted at fold. Beyond the fascia are several ochreous streaks, the inner connecting with an ochreous and black patch; the one from middle of wing sends a curving fascia under costa to anal angle before termen. On the outer third the ochreous spots merge together in a continuous streak below costa. The dark ground color is almost entirely overlaid or dotted with metallic blue. There are some black vertical lines from ocellus to above middle of wing. The ocellus is not clearly defined, consisting of an irregular line of steely-blue scales defined on each side by these black lines. Cilia pinkish-fuscos.

Hindwing: smoky fuscous, slightly paler at base, cilia whitish; underside both wings grayish-fuscous; forewing a shade darker with costal spots repeated on extreme edge.

Three specimens, Hazleton, Pa., June 4th and July 14th, Dr. Dietz; Hampton, N. H., July 25th, S. Albert Shaw.

Allied to and very much like *osmundana* Fern., but entirely lacks the shining whitish bands in the outer half of that species as well as its well-defined spot on dorsum before anal angle.

***Olethreutes daeckiana* sp. nov.**

Expanse 17 to 19 mm.

Head: black, mixed with pink scales; palpi pale fawn, black outwardly and apically; antenna blackish-fuscous; thorax blue-black; patagia mottled, pale fuscous and pink; abdomen fuscous; legs cinereous, dusted and banded with black.

Forewing: mottled, shining, dull blue-black and pinkish-ochreous. There is a transverse fascia in middle of wing of velvety-black scales, changing to dull ochreous at dorsum; the inner edge is indented four times; the outer edge gives off three long spurs about equally separated. A smaller black spot is on fold at inner fourth; a disconnected black streak runs from it to base, and above it on costa is another. There is a lunate black spot before apex and a black line from anal angle to above middle of wing. The black spots are generally outwardly outlined with reddish-ochreous. The balance of the ground color is shining dull-blue, dotted with black and pinkish-ochreous. Before the middle the costa is marked with six short reddish-ochreous dashes; there are four larger wedge-shaped streaks of same color on outer half; the two outer join below costa and send a line paralleling termen to middle of wing; the outer ends of veins before termen are outlined with black. Cilia bluish-fuscous with a darker line at base.

Hindwing: coppery-brown; cilia fuscous with darker basal line; underside, both wings the same; forewing less coppery and more grayish-fuscous.

Ten specimens, bred from larvæ boring in the stalks and flowers of the pitcher plant, *Sarracenia purpurea*, at Toms River, N. J., and Brown's Mills Junction, N. J., issued July 4th to Aug. 4th, all collected and bred by Mr. E. Daecke, in whose honor the species is named.

This species belongs to the group in which are *hebesana* Walk. and *agilana* Clem.

**Olethreutes wellingtoniana** sp. nov.

Expanse 18 mm.

Head: fuscous, hoary-white on top; palpi cinereous, outer joint dark brown, antenna cinereous; thorax mottled white and fuscous; abdomen yellowish; legs ashy-white, shaded with dark brown.

Forewing: mottled, white, gray, dark fuscous and black. The darker scales form a fascia across wing beyond middle; the inner edge from costa at middle curving slightly inward to middle of wing; thence more or less distinctly to dorsum; the outer edge from costa at three-fifths from base, angles outwardly to middle of cell, then obliquely inward to dorsum before angle. It contains a whitish shade in outer angle, and is mottled with black above middle, with an occasional ferruginous scale. Before this is a white fascia, only clearly defined on upper half; before this is a darker shade, not definite enough to call a fascia, it contains four black dots in middle of wing, two above and two below fold.

The small basal area is slightly paler. Beyond the principal dark fascia, the apical fourth is white, with four indistinct large gray costal spots, the inner two sending a gray shade curving toward termen then to anal angle.

There is a row of seven or eight terminal black dots, the three upper ones the most distinct. Cilia grayish-fuscous, with a whitish basal line.

Hindwing: cinereous-gray, cilia same; underside same shade but mottled with fuscous.

Underside forewing dark cinereous gray, costal spots repeated and line at terminal dots faintly repeated.

Two specimens, Wellington, Br. Col., May 19th, collected by Rev. George W. Taylor.

**Olethreutes separatana** sp. nov.

Expanse 12-15 mm.

Head: black; palpi black, fuscous within; antenna fuscous; thorax black, patagia pale lilac, with a black spot near base, posterior tuft bronzy-black; thorax, inner half, cinereous, outer half fuscous; legs grayish-white, banded and dusted with dark brown.

Forewing: outer two-fifths pale lilaceous-white, with four pale fuscous costal streaks and a shade of the same color before termen. A small black dot in middle of wing at end of cell; and a gray shade at anal angle. The inner three-fifths of wing is mottled black and gray, with a lilaceous patch from base to inner fourth on upper half of wing which connects by a few pale scales with a geminate quadrate spot between dorsum and fold before middle of wing. Cilia pinkish-fuscous, paler at angle.

Hindwing: smoky brown, cilia whitish; underside yellowish-gray, mottled with fuscous

Underside forewing: smoky fuscous, costal dots repeated.

Nine specimens, Essex Co., N. J., June 14th to 15th; New Brighton, Pa., June 2d and Aug. 20th, J. A. Merrick; Washington Co., Ark., Aug., A. J. Brown; Cincinnati, Ohio, June 17th, Miss Braun.

This species has been wrongly identified as *O. dimidiana* Sodoff. in almost all collections. *Dimidiana* is a darker species. It has a spot on costa at inner third, and the blackish area comes much closer to anal angle. It does not have the pale shade from base and the pale spot on dorsum before middle. Have never seen a North American specimen at all like the European *dimidiana*, and do not believe it occurs on this continent.

***Olethreutes mana* sp. nov.**

Expanse 18 mm.

Head: ferruginous and black; palpi pale cinereous, outer end of tuft and apical joint blackish; antenna brownish-fuscous, blackish at base; thorax brown, posterior tuft black; abdomen fuscous; legs yellowish-white, banded and dusted with blackish-brown.

Forewing: inner three-fifths yellowish-brown, vertically strigulated with wavy darker brown and fuscous, which on the costa form darker dots; below the fold on the inner half is a whitish shade, with a cluster of long blackish scales on the dorsum before it. The outer two-fifths is creamy-white, with a shade of fine fuscous dots before apex, divided by a line of raised shining cream-white scales; there is a small patch of leaden scales above middle of wing at end of cell, surrounded by a ring of white raised scales, with a small tuft of the same above and below, the latter running to anal angle and continued along termen to middle. There is a leaden spot in middle of wing near end of cell and another below it on the dorsum, both in the dark area. The dark and whitish areas are rather sharply defined, the division being straight from outer third of costa to middle of dorsum. There are four blackish dots on costa in white area, and black scales are over each vein forming a terminal row, at the apex the black scales are more frequent, Cilia dirty white, becoming fuscous and black at apex.

Hindwing: smoky brown, cilia white, with a dark basal line; underside creamy-white, mottled and outward strigulated with brownish fuscous.

Underside forewing: smoky fuscous, dotted with creamy-white along costa and an preapical line of the same shade.

Two specimens, Black Jack Springs, Texas, Dr. Barnes; Victoria, Texas, April 10th, E. A. Schwartz.

Should be placed in list between *nimbatana* Clem. and *separatana* Kearf.

Cotypes in U. S. Nat. Mus. and my collection.

***Olethreutes rubipunctana* sp. nov.**

Expanse 17-22 mm.

Head: light brown on top, black in front and over eyes; palpi light brown inside, smoky black outside, apical joint black, tipped with light brown; thorax centre black, pale fawn at base of tuft, tuft saffron-red, patagia fuscous at base becoming pale fawn outwardly; abdomen grayish-fuscous, tuft pale ochreous; legs yellowish-white, banded and dusted with dark brown.

Forewing: the outer third pinkish-white, inner two-thirds mottled with shades of brown and black. In the middle of wing is a large black patch, its upper edge

touching costa, and lower nearly to middle of wing, about as wide as deep, two streaks of brown scales divide it in some specimens. There is a shade of dull slate-blue before and below it, and a few scales of the color on its outer edge beneath costa. Between the slate-blue streak and dorsal margin the fascia is continued of light brown mixed with black. Below the inner half of slate-blue scales is a pinkish-white patch on dorsum, and above it a light mottled brown patch to costa, the three forming a paler fascia. Inside of this pale fascia the basal area is mottled shades of brown, shaded outwardly with black below costa and below middle. On the dorsum at base is a patch of slate-blue. In the outer third white area there is a conspicuous spot above dorsum, inside the ocellic area, of two or three short vertical lines of brown and black, and a more or less distinct single line running up to middle of wing. There is a broken narrow band of black and brown scales from costal spot before apex to termen below middle, crossed on veins 6 and 7 by bluish lines; in some specimens the bluish vein lines, with the black interspaces at their outer ends closely resemble the rim and spokes of a fifteen degree wheel segment. On the costa, in the whitish area, are four large saffron spots; the apical spot is black, edged with saffron. Ciling shining dark blue, dusky at apex, whitish at anal angle, a fine whitish basal line preceded by black terminal line.

Hindwing: light coppery-brown, cilia whitish, underside gray, with a coppery deflection.

Underside forewing: smoky black, with large paler mottlings on costa and outer end.

Six specimens, Placer Co., Cal., May 1st, Vachell; Cisco, Cal., June 1st, Vachell; San Luis Obispo, Cal., March, Vachell; Colorado, No. 2693, Gillette.

Cotypes in U. S. Nat. Mus. and my collection.

### ***Olethreutes removana* sp. nov.**

Expanse 17-21 mm.

Head, palpi and antenna grayish-brown; thorax gray, tips of tuft and patagia pink; thorax, golden-gray tufts of long scales, on side whitish, anal tuft golden-brown; legs cream-white, banded and dusted with dark brown.

Forewing: dark gray, mottled with a darker shade. The color of wing is nearly a uniform gray, with all marking obsolete, with the eye can be seen a faintly darker line from middle of costa to anal angle; with a lens there is a darker shade at inner fourth of costa forming an inner fascia, entirely obsolete below middle of wing, and along costa slightly darker costal spots separated by a shade lighter gray. In the middle of wing before termen is a darker shade. Cilia concolorous.

Hindwing: light smoky brown, cilia whitish, darker at apex, underside whitish-brown, darker along termen and mottled below costa.

Underside forewing: dark fuscous-gray, with large whitish geminate costal spots.

Four specimens. New Brighton, Pa., Aug. 21st, F. A. Merrick; Algonquin, Ill., June 25th, Dr. Nason; Aweme, Man., Aug. 16th, Norman Criddle; Chicago, Ill., June, J. H. Reading.

***Olethreutes provana* sp. nov.**

Expanse 22 mm.

Head and thorax yellowish-white, posterior tuft black; palpi light brown; shaded with black on outside; antennæ light fuscous; abdomen yellowish brown, legs yellowish-white, dusted with dark brown.

Forewing: white, with an inner and middle dark fascia, the beginning of an outer fascia and two dark spots on costa between latter and apex.

The fasciæ and spots are white, dotted with black and edged with black. The inner fascia is very close to base and encloses a small basal patch of white, its outer edge starts at inner sixth, and is indented in middle of wing, reaching dorsum at inner third; the middle fascia consists of three superimposed spots, the upper at middle of costa, its lower end pointed and touching the middle one which is oval and horizontal, the dorsal spot is before anal angles and well defined on inner side only. The outer semi-fascia is in the shape of a large rounded spot on outer third of costa and reaching to upper third of wing, between it and dorsum is a small shade of dark scales. The two inner fascia are somewhat overcast with yellowish, and the outer spots with olivaceous gray. Between the inner and middle fasciæ the ground color forms a distinctly outlined white fascia, with a few vertical strigulations of gray. Before the termen is a line of black scales, not reaching apex and below middle broken into three dots. Cilia grayish fuscous, with a darker line at base.

Hindwing: pale brown, darker outwardly, cilia whitish and darker basal line. Underside yellowish-white mottled at apex.

Underside forewing: smoky brown, mottled with darker, costal spot repeated.

One ♂ specimen. Wellington, B. C., April, Rev. George W. Taylor.

***Olethreutes devotana* sp. nov.**

Expanse 14 to 15 mm.

Head and palpi fawn-brown; antenna gray, brown at base; thorax reddish-purple; patagia lilaceous-gray and the same color at base of tuft; abdomen and legs pale-ochreous, latter faintly dusted with brown.

Forewing: blackish-bronzy-brown, overlaid with metallic-blue on inner half below costal spots and on dorsum before anal angle. In the middle of dorsum is a large rounded cream-white spot; the apical fifth of wing is cream-white, indented by a brown shade from apex, opposite the inner end of which is a round patch of metallic-blue; thus the white is nearly divided into two spots, the smaller, triangular one on costa before apex and the larger one lying within the lower half of termen. There is a dot of blue in the latter near its upper edge, and an oblique streak of blue crosses the dark apical shade from the costal spot before it. Over the ocellic area are shining white scales. Cilia brown at apex, white below middle.

Hindwing and underside both wings fuscous-brown.

Three specimens. Hastings, Fla., June 8th, A. T. Brown; Ch. Harbor, Fla., March (Hulst collection), Dr. Dietz; Florida, Prof. Fernald.

Cotypes in Prof. Fernald's and my collection.

**Eucosma pandana** sp. nov.

Expanse 24 to 28 mm.

Head, palpi and thorax whitish-cinereous, speckled with brownish-fuscos; apical joint of palpi black; antenna cinereous; abdomen pale cinereous; legs whitish, dusted with fuscous.

Forewing: dark reddish-brown, heavily overlaid with white-tipped scales; the whitish color forms a wide fascia from middle of costa to dorsum; its inner line angles outwardly to middle of wing, then obliquely inward to inner fourth of dorsum. The outer line is not clearly defined, but is as a shade from middle of costa to outer fourth of dorsum. Beyond this and parallel to it is a band of the darker color, outwardly edged with whitish scales; it curves inward slightly at end of cell and terminates in anal angle. On the outer third of costa are four obscure dark costal spots outlined with white. The ocellus consists of an irregular cluster of slightly shining whitish scales. Cilia same as wing, preceded by an irregular line of white.

Hindwing: light smoky-fuscos; cilia paler and preceded by a darker band. Underside smoky-fuscos, strigulated with fuscous. Underside forewing smoky-fuscos, minutely dotted with whitish; costa dotted with pale-ochreous and dark-brown spots.

Five specimens. Wilgus, Cochise Co., Ariz., Dr. Barnes; Kerrville, Texas, Dr. Barnes.

**Eucosma nandana** sp. nov.

Expanse 26 to 30 mm.

Head: brownish-gray, speckled with whitish; palpi gray-black, speckled with whitish; antenna light fuscous; abdomen pale cinereous, speckled with light brown; anal tuft reddish-brown; legs whitish, powdered with brownish-fuscos.

Forewing: ochreous-gray; the tips of many of the scales are white, giving a powdered appearance over the whole surface; the ochreous-gray are replaced by blackish-brown scales in an obscurely defined band from inner third of dorsum to outer three-fifths of costa. This dark fascia is clearly defined on its outer edge, and is indented a quarter below costa. In some specimens the dark shade extends to base; in others it is lost before reaching the inner fourth. On the outer end of wing a similar darker line starts from near apex, obliquely, to end of cell in middle of wing, then angles outward, then inward to dorsal margin at outer fourth. Beyond this are some dark vertical strigulae. The dark lines are caused by the absence of the white tips to the scales. Cilia brown, thickly dotted with white.

Hindwing: pale fuscous in ♂, darker fuscous in ♀; cilia fuscous, dotted with darker scales; underside pale cinereous; underside forewing smoky-brown.

Six specimens. Rounthwaite, July, Marmont; Regina, Sept., Willing; Chicago, Ill.; Iowa, Gillette, Acac. Cat., 142.

Cotype in U. S. Nat. Mus.

**Eucosma mandana** sp. nov.

Expanse 18-19 mm.

Head, thorax and antenna rusty brown; palpi cream color, fuscous outwardly; abdomen whitish-fuscos, tuft darker; legs whitish-fuscos, dusted with brown.

Forewing: rusty brown, mottled with darker brown on costa, the outer half of costa obliquely striped with reddish and pink lines, between these are lines of dull leaden scales, the longest extending from outer fourth of costa to middle of termen. The ocellic spot contains two or three short black lines, the vertical side-bars are dull leaden. Cilia gray, powdered with black.

Hindwing: light fuscous, cilia whitish; underside the same.

Underside forewing: smoky fuscous, ochreous-brown on costa, mottled with darker brown.

Four specimens. Montclair, N. J., July 1st, Light Trap; Washington, D. C., June, at light, A. Busck; Plummer's Island, Md., July 9th, A. Busck.

Cotype in U. S. Nat. Mus.

***Eucosma landana* sp. nov.**

Expanse 23 mm.

Head, palpi and thorax black, finely speckled with whitish-gray; antennæ fuscous; abdomen whitish-gray; mottled with fuscous; legs whitish, powdered with gray above and annulated with brownish fuscous on the tarsi.

Forewing: dark gray, evenly speckled all over with whitish. Cilia pale gray, speckled with whitish internally.

Hindwing: light smoky fuscous, with darker mottlings around external edge, cilia whitish; underside light ochreous-fuscous, mottled along costa with brown and a few dots of same color along outer margin.

Underside forewing: same as hind wing, but a shade more gray and less ochreous, mottled with brown along costa and external margin.

Four specimens. Rounthwaite, Manitoba, Can., April 25th, collected by L. E. Marmont; Aweme, Man., May 18th to June 12th, Norman Criddle.

This species is unlike any Tortricid I have ever seen; its very distinctive and unique color plan will make it easily recognizable.

***Eucosma canariana* sp. nov.**

Expanse 28-34 mm.

Head: canary-yellow; palpi pale clay-brown; antennæ same as palpi, yellow at base; thorax canary-yellow, somewhat paler in the middle and the ends of patagia; abdomen cream color; legs, pale clay-color, with a yellowish tinge.

Forewing: shining silvery-white, with two canary-yellow lines from base to termen; the upper line starts on costa at base, continues in a straight line to termen, where it curves up and ends at extreme apex; the second line begins at the middle of base, continues in a slightly curved line below the fold to anal angle, at end of cell it sends an oblique spur up to the upper line; at the anal angle it continues up to the termen for a distance equal to its own width, then continues up through the cilia almost to the apex. These yellow lines are lightly dotted with brown on their outer ends. Cilia, except as noted, pale yellowish-cream. Male costal fold yellow.

Hindwing: pale fuscous, cilia white; underside whitish.

Underside hindwing: smoky fuscous, cream color along costa.

Eight specimens. Stockton, Utah, Aug. 1st to 11th, Tom Spalding; Utah, July, O. C. Poling; Southwestern Colorado, July 11th and 14th, W. E. Dietz; Glenwood Springs, Colo., Aug., W. E. Dietz.

This species is closely allied to *E. crambitana* Wlsm. The lines of the latter are Indian red; the upper line ends in a strong fork, and the spur from lower to upper line is absent.

***Eucosma fandana* sp. nov.**

Expanse 32 mm.

Head and thorax olivaceous-yellow; palpi and antennæ pale clay color; abdomen silvery white, anal tuft pale clay; legs white, dusted with pale fuscous.

Forewing: a light olivaceous-yellow, with two silvery-white horizontal lines. The upper begins on costa at inner fourth and ends in apex, beyond the middle the costa along this line is edged with yellow. The second starts at base, and runs in nearly a straight line through middle of wing nearly to termen, at its outer end it turns upward and points towards apex. At the extreme base the white color spreads to dorsal margin. Cilia yellowish-cream.

Hindwing: fuscous, cilia white, clouded with fuscous; underside paler fuscous, white along costa.

Underside forewing: smoky fuscous, yellowish along costa and white below vein 1b.

One specimen. Denver, Colo., Osler.

Belongs in the same group as *crambitana* Wlsm. and *canariana* Kearf., but whereas in these two species the silvery white is the predominant color, in this one the reverse is the case.

***Eucosma spaldingana* sp. nov.**

Expanse 14-20 mm.

Head, palpi, thorax and abdomen white; antennæ pale fuscous, with a whitish bloom; legs white, dusted with light brown.

Forewing: silvery-white, with two transverse narrow bands, and patch in apical end pale clay-yellow, rather heavily overlaid with Indian-red scales. The inner line starts from inner fourth of dorsum, and reaches costa at inner third, it follows costa to beyond half and again crosses wing, obliquely to dorsum, before anal angle, where it broadens out and covers the outer third of dorsum. From middle of wing at end of cell it sends a spur into apex, this broadens below apex into a large patch covering the upper two-thirds of outer fourth, with a few scattered scales continuing along termen to anal angle. On the costa, just before apex, the dark color encloses a small spot of white. The male costal fold is of the dark color and a small patch of same below it. Cilia white.

Hindwing: silvery-whitish-fuscous; underside the same, cilia white.

Underside forewing: pale clay-yellow, mottled with pale brown.

Fourteen specimens. Stockton, Utah, June 19th to Aug. 11th; all collected by Tom Spalding.



**Eucosma gandana** sp. nov.

Expanse, ♀, 33 mm.

Head and thorax pale yellow; palpi and antennæ pale clay-yellow; abdomen white, with a faint yellowish reflection; legs cream color, dusted with darker clay-yellow.

Forewing: very pale yellow, without stripes or marks; a shade paler along costa and in outer fourth beyond cell. Cilia the same.

Hindwing: white, finely checkered with very light fuscous, cilia white. Underside the same.

Underside forewing: yellowish-fuscous.

One ♀. Denver, Colo., Sept. 10th, Oslar.

This species is of the same shape and general appearance as *crambitana* and *canariana*. I would not venture to describe it from one ♀ except that it can be easily recognized by its uniform wing coloring without marks of any kind.

**Eucosma handana** sp. nov.

Expanse 23-30 mm.

Head and thorax pale brown; antennæ pale brown, dusted with darker brown outwardly; antennæ clay-yellow; abdomen and legs pale fuscous, latter dusted with light brown.

Forewing: clay-yellow, rather heavily overlaid with pale pinkish terra-cotta-brown. There are no well defined fasciæ or spots; the darker shade forms an obscure triangular patch, with base resting on dorsal margin between inner and outer fourths, the point of the triangle reaching top of cell a third from base. On the outer third are vertical irrorationes of shining clay-yellow. The edge of the costa is reticulated with the two shades. Cilia clay-yellow, inwardly edged with a slightly darker line.

Hindwing: pale clay-yellow, the veins overlaid with light terra cotta. Cilia whitish. Underside the same.

Underside forewing: clay-yellow, reticulated with pale brown.

Five specimens. Stockton, Utah, July; collected by Tom Spalding.

This species will go in the group of *grandiflavana* Wlsm. *subflavana* Wlsm. and *larana* Wlsm.

**Eucosma kandana** sp. nov.

Expanse 18-20 mm.

Head, palpi, antenna and thorax clay-yellow; abdomen whitish-yellow, tuft darker; legs pale clay-yellow.

Forewing: clay-yellow, reticulated along costa and outer third with very pale brown. There are several irregular vertical shining streaks of clay-yellow from costa before apex, two of which reach to anal angle and form the two vertical bars of an obscure ocellic spot, between and on each side of the bars and also in the apex are a few tiny dark brown dots. Cilia pale brown, dotted internally with dark brown.

Hindwing: much darker than forewing, smoky brown, cilia pale brown; underside the same but a shade lighter.

Underside forewing: same as upperside of hindwing, with the reticulations repeated along the costa.

Six specimens. Stockton, Utah, Aug. 4th to 17th; collected by Tom Spalding.

This species belongs with the *irroratana* Wlsm. and *atomosana* Wlsm. group.

**Eucosma floridana** sp. nov.

Expanse 18-22 mm.

Head, palpi and thorax white, with large spots of very pale terra cotta on the crest of the head, base of antenna, posterior end of thorax and end of patagia; antenna whitish-fuscous; abdomen cinereous, anal tuft whitish-ochreous; legs pale terra cotta, dusted with fuscous.

Forewing: pale terra cotta, darker towards apex, lighter below costa, the extreme costa is a darker shade and profusely marked with white dots, the dots on the outer half are continued as lines of shining opalescent scales, from the outer fourth the line runs obliquely to termen below apex; the line before this, from costa between half and outer third, is somewhat broken and runs obliquely, paralleling the upper line, to vein 7, beyond end of cell, thence follows the vein to termen. Before the apex is a short vertical line, and dots of the shining whitish scales occur over the outer third of wing. The ocellic spot is large, whitish-gray, dotted with darker gray and blackish scales, inwardly the vertical bar of shining scales is irregular, the outer bar is missing, but a line of four or five dots of shining scales are in the outer edge of spot. Cilia gray, dotted with blackish.

Hindwing: light smoky fuscous, white above cell. Cilia gray-fuscous. Underside both wings smoky fuscous.

Forewing: darker and mottled with pale ochreous along costa.

Seven specimens. Hastings, Fla., Oct. 6th to 15th; collected by A. J. Brown.

This species will go in the group with *cataclystiana* Walk.

**Eucosma randana** sp. nov.

Expanse 24-28 mm.

Head, palpi and thorax grayish-brown; antenna and abdomen fuscous; legs whitish powdered with light brown.

Forewing: light ochreous-brown, closely strigulated on costa and outer half of wing with vertical black lines. Ocellic spot very large, white, with three horizontal rows of five each quadrate spots, overlaying these black spots, on the inside, in the middle and the outer edge are short vertical bars of raised (curved over, flattened), leaden, shining scales. There are five short lines of these same scales from costa between end of male costal fold and apex, each ending in a white spot on extreme edge of costa, the line before apex is longest and paralleling termen, ends above the bar outlining the ocellic spot. Four smaller dots before the ocellic spot. Cilia white, atomized with black.

Hindwing: smoky fuscous, cilia whitish; underside grayish-fuscous.

Underside forewing: dark smoky fuscous, with costal spots repeated in pale ochreous.

Eight specimens. Denver, Colo., Clear Creek, Colo., June 16th ; all collected by E. J. Oslar.

This species is very much like *E. circula* Hbn., but the size is very much larger, and the costal and ocellic spots are somewhat differently arranged.

***Eucosma sandana* sp. nov.**

Expanse 19-24 mm.

Head : whitish clay-yellow : palpi white, dusted on outside with pale-clay yellow ; antenna pale gray ; thorax whitish in front, clay-yellow in middle and gray behind ; abdomen shining cinereous, tuft clay-yellow ; legs whitish, dusted with ochreous.

Forewing : ochreous-brown, inner half of costa, above cell, whitish, dotted with brown ; ocellic spot large, covering almost the entire outer fourth of wing, finely dotted with black in a large round spot, in the lower half are three horizontal black lines, crossed by three vertical bars of shining golden scales. From the outer half of costa are two long lines of shining scales, the inner runs obliquely outward to end of cell, then vertically downward inside the ocellic spot, but separated from latter by a line of ground color ; the outer runs obliquely, outlining the ocellic spot above to termen below apex. A few metallic dots on interior of wing. The outer half of costa is marked with small wedge-shaped whitish spots, separated by the brown ground color. Cilia gray, powdered with black dots.

Hindwing : pale gray, cilia whitish ; underside the same.

Underside forewing : ochreous gray.

Three specimens. Volga, S. Dak., W. E. Dietz ; Chimney Gulch, Golden, Colo., Sept. 3, E. J. Oslar.

***Eucosma reversana* sp. nov.**

Expanse 17-19 mm.

Head, thorax, palpi and abdomen white, shaded with pale brown on outer side of patagia and palpi ; antenna white, finely annulated between joints with fuscous ; legs white, powdered with clay-yellow.

Forewing : white, with grayish-brown spots and semi-fasciæ ; below the costa these dark spots and bands all incline inward, that is, nearer the base on their lower ends and nearer the apex at their upper ends. There is an obscure patch of dark scales in middle of wing at base ; from inner fourth of dorsal margin a fascia runs obliquely outward above middle of wing, broader at its upper end ; a band lies obliquely over end of cell, twice as long as wide and not touching either costal or dorsal margin ; on outer fourth of dorsum a short oblique patch borders inner side of ocellic spot ; from apex is a short streak to middle of wing, broadening out below. The costa is marked with alternate white and brown dashes, the white dashes on outer half are geminate, and the pair before the apex curve downward and outward into termen below apex. Ocellic spot obscure, a few dots of dark brown, bounded on each side by vertical bars of shining white scales. Cilia white, dotted with black.

Hindwing : yellowish-gray, cilia white ; underside the same.

Underside forewing : smoky gray, costal spots repeated.

Three specimens. San Antonio, Texas, Dr. Wm. Barnes.

This species much resembles *E. atomosana* Fern., but can readily be separated, as the direction of the stripes are reversed.

***Eucosma brightonana* sp. nov.**

Expanse 13-16 mm.

Head, palpi and thorax grayish-brown; palpi, abdomen and legs fuscous.

Forewing: gray-brown; a large dark brown spot on dorsum, between inner fourth and middle, extending to middle of wing, pointed on top, rounded on sides; a smaller spot of same shape and color on dorsum before angle; from the middle of costa an irregular narrow fascia goes obliquely to middle of wing at end of cell, sending a wavy line down to the dorsal spot before angle. Beyond this is a paler gray brown fascia, beginning on fascia as a germinate spot, broadening below until it involves all of the ocellic space. Beyond it on costa are three paler geminate streaks. A darker shade in apex. Cilia dark gray.

Hindwing: smoky fuscous, cilia brownish-gray; underside of both wings the same, with a dark spot in apex of forewing.

Seven specimens. New Brighton, Pa., July 29th to Aug. 10th; all collected by F. A. Merrick.

***Eucosma tandana* sp. nov.**

Expanse 20-22 mm.

Head, palpi, antenna and thorax grayish-brown, patagia whitish posteriorly; abdomen brownish-white; legs yellowish-white.

Forewings: grayish-brown, darker on the male fold, and the trace of a darker fascia from middle of costa; the costa in the outer half is faintly strigulated with brown. These marks are all very faint and inconspicuous. There are two prominent dark brown spots; one before the middle of wing, resting on dorsum, its upper end touching fold, it is about as wide as long and slightly rounded on the sides; in one specimen a streak of brown is continued up above middle of wing and connecting with the obscure central fascia. The other spot is in the apical end of the wing; it rests on costa before apex and extends down nearly to anal angle, it is nearly straight on its outer edge and convex on its inner edge, its length is twice as long as its width on costa, there is a narrow line of ground color between the upper two-thirds of its length and termen. Cilia gray-brown.

Hindwing: smoky brown, cilia paler; underside gray-brown, a shade darker along costa.

Underside forewing: smoky brown, spotted with dull ochreous along costa and termen.

Four specimens. Algonquin, Ill., July 8th, Dr. Nason; New Brighton, Pa., July 18th, F. A. Merrick; Arlington Heights, Ill., Aug. 15th, A. McElhose; Iowa, Ac. Cat. U. S. Nat. Mus., 985, Gillette.

Cotype in U. S. Nat. Mus.

**Eucosma vandana** sp. nov.

Expanse 12-16 mm.

Head, palpi and thorax whitish to grayish-brown, apical joint palpi black; antennæ whitish-gray; abdomen fuscous; legs whitish, powdered with brown.

Forewing: dull blackish-brown; obliquely striped with grayish-white along costa; the line from outer fourth runs to termen beneath apex, the line from costa, immediately before apex, follows termen to below middle. The ocellus is above the anal angle and consists of two broken horizontal lines of gray and white. Between the middle of wing and dorsum are oblique strigulae of white, from the inner third to anal angle. Before this strigulation is a reddish-brown patch. Cilia gray-brown, dotted with pale fuscous. In some specimens these whitish lines are nearly obsolete, the entire surface of wing being a dull mottled blackish-brown.

Hindwing: dark smoky fuscous, cilia a shade paler; underside gray fuscous.

Underside forewing: smoky fuscous, flected with dull ochreous on costa.

Sixteen specimens. Hastings, Fla., March, April, and Oct.; collected by A. J. Brown.

**Eucosma wandana** sp. nov.

Expanse 17 mm.

Head and palpi ochreous-brown, blackish-brown at outer ends of tuft over eyes and outer ends of palpi; antenna blackish-brown, faintly annulated with ochreous-brown between joints; thorax black-brown; patagia ochreous-brown; abdomen blackish-fuscous, whitish beneath; legs whitish on underside, heavily powdered with fuscous above.

Forewing: blackish-brown, more or less mottled with gray and ochreous scales; beneath fold, in ocellic space and a small spot on costa before apex, grayish-ochreous. The ocellic spot contains three horizontal black lines, the vertical bars shining gray-white, the outer is broken. There is a conspicuous dark shade on fold from base to inner third, and beyond the outer end of it, above the gray-ochreous dorsal patch are a few white scales. From the costa beyond the male fold are four pairs of white dashes, becoming silvery metallic below costa; the inner pair send a broken line to the inner ocellic bar, the second pair send a line, which connects with a short line from the fourth pair, into the outer ocellic bar. There are two black dots below the fold, one close to base and the other about one-sixth from base. Cilia dark gray, dotted with black.

Hindwing: dark smoky brown, paler at base, cilia gray, underside smoky-brown.

Underside forewing: dark smoky brown; costal spots repeated.

One ♂ specimen. Cincinnati, Ohio, Aug. 25th; Miss Annette F. Braun (No. 164).

**Eucosma xandana** sp. nov.

Expanse 12-17.5 mm.

Head, palpi, antenna and thorax gray; apical joint, palpi black; abdomen fuscous; legs gray, tarsi powdered with black.

Forewing: pale whitish-gray, with two narrow brown-black fascia; the inner from inner fifth of costa to inner fourth of dorsum widens out at middle of

wing to three times its width above and narrows below middle to half the widest part; the outer starts from middle of costa and runs obliquely to dorsum before anal angle, the upper half is very narrow and convex outwardly, from middle to above fold it widens four times its width above but contracts slightly before reaching dorsum. On the ground color between base and first fasciæ are about six brown dots above fold and four below; between first and second fasciæ are two brown dots on costa and two below them, and two faint lines on dorsum; between second fasciæ and apex are seven brown dots in costa and one in apex, each is duplicated below costa; there is an irregular row of brown dots on termen and a short vertical line of same from anal angle, on each side of which are one or two scattered dots. Cilia pale fuscous, preceded by darker line.

Hindwing: pale gray, cilia same, but shining; underside the same.

Underside forewing: smoky gray, costa faintly dotted with brown.

Nine specimens. Cincinnati, Ohio, March 6th to 26th; collected by Miss Annette F. Braun.

***Eucosma yandana* sp. nov.**

Expanse 16-19 mm.

Head and antenna gray; palpi pale gray; thorax gray, speckled with brown; abdomen grayish-fuscous, anal tuft pale yellow; legs gray, tarsi annulated with brown.

Forewing: whitish-gray, lightly strigulated and dotted with fuscous. There is a semi-fasciæ from inner fourth of dorsal margin to middle of wing, with a small round dot above and below the fold. The middle fasciæ starts from middle of costa as a narrow brown line to end of cell where it widens out into a small patch of brown, then continues as a narrow line to outer fourth of dorsal margin. Between these fasciæ is a faint line of brown from dorsum to above middle. There is a small rounded patch of lighter brown in the apex and between it and male costal fold are four or five darker brown oblique costal lines. Between veins 6 and 7 is a row of four brown dots, with a vertical line of brown below the inner and outer to the dorsum. A terminal line of brown. Cilia shining grayish-fuscous.

Hindwing: gray, darker at apex, cilia light shining gray above and beneath.

Underside forewing: smoky gray, costal spots repeated, whitish-gray and brown along termen.

Nine specimens. New Brighton, Pa., March 26th to April 11th; collected by F. A. Merrick.

***Eucosma zandana* sp. nov.**

Expanse 14-16 mm.

Head, antenna, thorax and abdomen dark blackish-gray; palpi light gray, outer end of tuft and apical joint black; legs gray, dusted with dark brown.

Forewing: gray, mottled with darker shades of gray and brown. The lower half of wing between outer third and anal angle is whitish-gray, strigulated with oblique dark grayish-brown lines. The costa beyond the male costal fold is marked by six or seven brown-black dots, separated by gray. Beyond the cell on upper half of wing is a semi-circle of black dots, with the open side below. Cilia brownish-gray, preceded by a dark terminal line.

Hindwing: smoky brown, cilia shining gray-brown, underside the same.

Underside forewing: dull smoky brown, with dull ochreous spots on costa.

Seven specimens. Cincinnati, Ohio, March 26th to May 7th; collected by Miss Annette F. Braun.

**Eucosma bobana** sp. nov.

Expanse 22-26 mm.

Head: pale clay-yellow; palpi same, dusted with fuscous outwardly, apical joint fuscous; antenna pale clay-yellow, the segments dusted with brown; thorax pale clay-yellow, shaded with bright ochreous-brown in front and at base of patagia; thorax and legs whitish-gray, the latter dusted with light brown.

Forewing: alternate bands of bright ochreous and dark reddish-brown, these bands are broken and their direction changed at the middle of the wing, giving the surface a checkered appearance. The extreme base is narrowly white, followed by a wider ochreous band, then by a white band, marked below fold with an ochreous spot and on upper vein of cell with a brown spur from the next outer fascia, the latter begins at inner fifth on costa as a blackish streak, becomes narrow below costa to middle of wing, then widens to dorsal margin which it reaches at inner quarter, below the costa it is ochreous and brown, outwardly edged with dark brown. It is followed by a broader ochreous fascia, interrupted just above middle by a spur from the succeeding dark fascia. The latter begins as a rich brown spot on costa to upper vein of cell, where it is cut by a horizontal streak of black and brown scales, the downward continuation of the fascia starts from outer end of this streak, and is rich brown, having a strong lobe on its outer edge. Beyond this, above middle of wing, is a large patch of ochreous and white scales, with two brown dots on costa. Beyond it is a subapical brown and black patch, triangular in shape, with a point touching costa, an inner spur below the yellow patch before it, and a curved streak along the lower half of termen, this latter streak becomes yellow shortly before the middle. On the lower half of outer fourth is a curved ochreous patch, with a small dash of fuscous scales at anal angle. The ochreous patches and fasciæ are all outlined by white, and the brown patches usually outlined by black or darker brown. Cilia white, fuscous at apex, and two dashes of fuscous below apex.

Hindwing: pale fuscous, cilia white, underside whitish-gray, powdered with fuscous below costa.

Underside forewing: smoky fuscous, with costal spots repeated.

Three specimens. Salida, Colo., June 11th; Southwestern Colorado, July 13th; Harris Co., Texas, July 5th. All from Dr. W. G. Dietz.

**Eucosma cocana** sp. nov.

Expanse 19 mm.

Head: ochreous-brown, darker on sides and collar; palpi dull ochreous, outside and apex heavily dusted with blackish-gray; thorax ochreous-brown, crossed by two narrow lines of whitish, outer ends of patagia and posterior end of thorax gray and white; antenna dark fuscous; abdomen shining gray, anal tuft clay-yellow; legs whitish, heavily overlaid with speckled gray and brown scales.

Forewing: soft Indian-red, or the tint known as old-rose, crossed by numerous

vertical lines of shining gray raised scales; at the inner third there is a narrow transverse line of ochreous, and the ocellic patch is the same color, both edged with the gray lines. Between apex and first ochreous line are two other gray lines, somewhat broken; the extreme base is gray, sending a streak around dorsum to inner fourth. Between the ochreous fascia and ochreous ocellic spot is a broad, partly geminate band of gray. On the outer half of costa at end of each vein is a spot of gray. From the apex a gray line runs obliquely inward over vein 7, about half way to end of cell, then angles obliquely downward ending on termen over vein 5, and enclosing a terminal patch of bright ochreous. The male costal fold is dark gray, with three or four whitish spots at the beginning of the inner gray lines. Cilia gray, cut with white at end of each vein.

Hindwing: smoky brown, cilia pale fuscous; underside gray, mottled with fuscous below costa.

Underside forewing: smoky fuscous, whitish on termen, costal spots faintly repeated.

One ♂ specimen. Tryon, N. C., May 17th; collected by W. F. Fiske.

***Eucosma sonomana* sp. nov.**

Expanse 20 mm.

Head: pale fawn; palpi pale fawn within, dark gray, speckled with whitish, without; outer joint black; antenna leaden gray, thinly annulated with white; thorax grayish-fawn, base of patagia reddish-ochreous; abdomen dark fuscous, anal tuft black; legs pale fawn, dusted with blackish fuscous.

Forewing: coppery-red, darker on inner half, shading into coppery-ochreous at termen. There are two shining leaden-gray transverse fascia, the inner from inner fourth of costa to inner third of dorsum is composed of two pairs of lines, the inner edge deeply concave in the middle, and with some irregular lines of the same color in base, enclosing a round spot of the reddish ground color. The outer fascia begins on costa beyond middle as two long whitish dashes. Contracts at top of cell, below which is an irregular ring of darker leaden scales which connect with a whitish line to dorsum at outer fourth, with a spur to anal angle. The inner of a pair of white dashes on costa, before apex, sends a whitish shining line to middle of termen. Between this line and outer fascia the costa is marked with two white dashes and streaked with gray. Cilia white, with an outer edging of fuscous, and a dark fuscous basal line, below apex, which is interrupted by a white dash over each vein.

Hindwing: smoky gray, preceded by a darker line, following a paler basal line. Underside both wings the same, but forewing a shade darker and marked with white on costa, also white ciliate dashes repeated.

Three ♂ and one ♀. Sonoma Co., Cal., May; Carmel-by-the-Sea, Monterey Co., Cal., April. All collected by Arthur H. Vachell.

***Eucosma dodana* sp. nov.**

Expanse 16.5–24 mm.

Head: cinereous; palpi ashy-gray; antenna fuscous; thorax black, speckled with cinereous; abdomen dark fuscous, lighter on side and tuft; legs pale gray, dotted with fuscous.



Forewing: light gray, with large spots and fasciæ of blackish-brown. The basal area extends in middle of wing to inner fourth, receding to costa and dorsum, it is black outwardly, gray towards base; on inner third of costa is a large black spot and another before anal angle on dorsum, a third one is between these two in the middle of wing over outer third of cell, the three forming a broken fascia. On the costa are three large black spots, with a fourth in apex, which enlarges below, then contracts and follows termen to anal angle. The gray areas between these dark spots are vertically strigulated with blackish-brown. This description is from the most intensely marked specimen, in others, the dark spots are contracted and the gray color predominates, sometimes dividing the spots, and in others the large dark spots are almost lost. Cilia yellowish-gray, dusted with fuscous.

Hindwing: dark gray, cilia paler; underside both wings a uniform gray, with costal spots repeated.

Ten specimens. Southwestern Colorado, July 13th, Dr. W. G. Dietz; Colorado, Dyar and Caudell.

Cotypes in U. S. Nat. Mus.

***Eucosma fofana* sp. nov.**

Expanse 21 mm.

Head, palpi and thorax dark ochreous-gray, heavily dusted with fuscous, and dotted with black on patagia; antenna dark fuscous; abdomen grayish fuscous, tuft ochreous-fuscous; legs gray, banded with white and powdered with dark fuscous.

Forewing: whitish-gray, spotted and strigulated with black-brown. There is an obscure dark fascia from middle of costa obliquely towards anal angle, it is well defined only in upper third. There are four rather large black dots on costa beyond it, the fourth being in the apex; below the second of these dots are two superimposed irregular rings, each composed of five or six dark dots; below the third is another such ring, and below it a line of dots before termen above anal angle. The basal area is not definitely defined, all of the inner half of wing is an irregular mass of large and small dots on the whitish-gray ground. Cilia yellowish-gray, preceded by a darker line.

Hindwing: smoky gray, cilia the same, but tips of scales whitish; underside yellowish-gray.

Underside forewing: yellowish-gray, dark spots repeated along costa, and rows of dark dots between the veins beyond the cell.

One ♂ specimen. Berthoud Pass, Colo., Aug. 22d; collected by A. J. Snyder.

This species strongly resembles *dodana* Kearf., and may prove to be an extreme variety of it. There is a certain formation of the markings, however, that leads me to believe it is distinct.

***Eucosma hohana* sp. nov.**

Expanse 20-22 mm.

Head yellowish-gray; palpi yellowish-gray, with a darker streak on lower, outer side of tuft; antenna gray, annulated above with paler gray; thorax gray,

finely dusted with darker gray; abdomen fuscous, anal tuft yellow; legs cinereous, heavily dusted with blackish-fuscous.

Forewing: whitish-gray, rather evenly dusted and dotted all over with blackish-brown; the costa is evenly marked with dark dots, about twelve beyond male costal fold, the outer ones are the largest; the dot beyond the middle and one on outer third are followed below by short lines of dots, opposite them on dorsum, two strigulae rise almost to middle; between each pair of these the ground color is rather free from dark dots and appears lighter. There is an obscure shade from apex to lower end of cell, it widens out in the middle above and below, there is a similar but smaller shade in the middle of the wing. There is a whitish preciliate line; cilia fuscous, extreme tips whitish.

Hindwing: above and beneath light yellowish-gray, cilia same.

Underside forewing: smoky fuscous, darker spots on costa.

Two specimens. Mt. Piran, Alberta, Aug. 17th; Dr. Wm. Barnes.

***Eucosma kokana* sp. nov.**

Expanse 20-21 mm.

Head, palpi, antenna and thorax gray, heavily dotted with fuscous; abdomen fuscous; legs pale clay-yellow, powdered with brown.

Forewing: whitish-gray, shaded with brown on interior of wing from base to end of cell. On outer half of costa are five flattened streaks of brown, from each of which is a line of brown below, the two interior join and run outward over vein 7, from the third and fourth the lines join a third below costa and continue as one into anal angle, the outer spot, before apex, is rounded, and has no line from it. Inside the termen is a brown line slightly concave towards its outer side. Cilia gray, dotted with fuscous-brown.

Hindwing: smoky gray, cilia paler, underside yellowish-gray.

Underside forewing: dark smoky gray, lightly dotted with dull ochreous along costa.

Two specimens. Cincinnati, Ohio, Nov. 3rd, Miss Annette F. Braun; Scranton, Pa., Oct. 8th, A. E. Lister.

The Scranton specimen is much lighter than the description, the lines in the outer third being obsolete and the brown shade over interior less dark.

***Eucosma lolana* sp. nov.**

Head: yellowish-brown, lighter over eyes and in front; palpi yellowish brown, dark brown on outside; antenna cinereous, finely annulated with black; thorax dark brown, yellowish posteriorly and ends of patagia; abdomen fuscous, paler at outer ends of joints, tuft yellowish; legs cinereous, powdered and banded with dark brown.

Forewing: dark brown or black, heavily overlaid with ochreous-brown scales; there is a conspicuous white fascia from inner fourth of costa to inner third of dorsum, it is concave on its inner edge and slightly convex on the outer with a short spur a third from dorsum. There are three brown dots on costa of outer third of wing, enclosed by a cream-white patch which connects with the cream-white ocellic spot, forming an outer white fascia. There is a row of black dots

on each side of this outer fascia, and a few on the sides of the inner and many others in the dark ground color between the fascia and in basal area. There is a short vertical bar of leaden scales through the ocellic spot, and a few scales of the same color are scattered over the apical fourth. Cilia light fuscous, preceded by a darker line.

Hindwing and underside of both wings very dark smoky brown, cilia pale fuscous, costal spots repeated.

Two specimens; Colorado, Gillette and Dyar and Caudell.

Cotype in U. S. Nat. Mus.

***Eucosma momana* sp. nov.**

Expanse 22 mm.

Head and palpi clay-yellow, clouded with smoky black on bases of antennæ, tips of scales on collar, outer end of palpi and a spot of the same on upperside of second joint of palpi near its base; thorax black, mottled with gray; abdomen white, at end of each segment fuscous between; legs white, banded and powdered with black.

Forewing: white, lightly strigulated with pale fuscous; there is an obscure pale fuscous fascia at inner fourth, and much broader across wing beyond middle, its inner edge starts from before middle of costa and goes in a straight line obliquely to within a third of dorsum where it angles inward and reaches dorsum at outer third; the outer edge starts from outer third of costa and curves unevenly to anal angle. There is a narrow broken fascia from a quadrate black spot on costa before apex, which divides in the middle of wing, one limb following the termen and the other to anal angle. There is a lunate brown apical spot extending into the cilia as black scales. The costal edge is white, with numerous black dashes for its entire length. Cilia below apex leaden-gray, cut with three or four white dashes.

Hindwing: smoky brown, white above cell, cilia leaden, white outwardly; underside the same, but a shade paler.

Underside forewing: smoky brown, with costal and ciliate marks repeated.

One ♂ specimen; Yuma Co., Ariz., desert, April 10th, received from J. B. Smith.

***Eucosma nonana* sp. nov.**

Expanse 24 mm.

Head and palpi white, shaded with black over the eyes and on the sides of the palpi; antenna pale fuscous; thorax white, heavily dotted with black at base of patagia; abdomen fuscous; legs whitish, banded and dusted with black.

Forewing: white, powdered with black and olivaceous scales. A dark shade runs through middle of wing from base to apex. Between inner third and middle of dorsum a white line goes obliquely outward to above middle of wing, it is bounded on the inside by a line of black scales; on each side of it there is a short line of black in the fold. There is a row of black dots on outer half of dorsum. The costa is sparsely marked with small black dots and dashes its whole length. The ocellic spot is obscure, defined on inner side by a short vertical bar of shining whitish scales. Cilia white, fuscous at apex and several streaks of fuscous and black scales below apex.

Hindwing: light smoky fuscous, white above cell, cilia whitish; underside pale gray, a few black dots below costa and in apex.

Underside forewing: smoky fuscous, whitish on costa, dotted with brown, white below fold.

One specimen, Pueblo, Colo., H. W. Nash.

***Eucosma popana* sp. nov.**

Expanse 15-18.5 mm.

Head, palpi and thorax white, dotted with black; a spot of black on upper side towards base and outside towards apex of second joint of palpi; antenna whitish; abdomen whitish, anal tuft cinereous; legs pale gray, dusted with brown.

Forewing: white, with fascia and spots of blackish-brown. An oblique fascia from inner third of dorsum to middle of wing, between it and base several wavy lines from dorsum to middle. At anal angle a triangular spot with its apex above middle. An oblique shade below costa to middle, over end of cell; a spur from its outer end joins another shade which runs below costal marks and into apex. Before apex, in outer half, are four triangular costal spots, on inner half of costa numerous small dots. The dark spots are all of blackish scales tipped with white; giving them a speckled appearance. Ocellic spot shining cream color, divided by a narrow brown vertical line, from its upper edge a narrow white line follows termen to apex. Cilia speckled white and black.

Hindwing: pale fuscous, darker at apex, cilia paler, underside the same.

Underside forewing: darker fuscous, whitish on costa, with dark costal marks repeated.

Twenty-seven specimens; Stockton, Utah, June 1st to Aug. 8th; collected by Tom Spalding.

***Eucosma rorana* sp. nov.**

Expanse 15-20 mm.

Head: clay-yellow, a streak of light brown across the middle; palpi clay-yellow, a spot of fuscous above on outside of tuft and at end of tuft below, apical joint fuscous; antenna whitish; thorax white, mottled with light brown; abdomen fuscous, anal tuft clay-yellow; legs whitish, dusted and banded with black.

Forewing: white, with bands and spots of blackish-brown. The extreme base is white, strigulated with brown, merging into dark brown at its outer edge, which is obsolete on costa, extends nearly to inner third at middle in the form of a rounded spot, and to inner fourth on dorsum as another spot, the two being separated by a pale shade. There is a well-defined dark fascia from middle of costa to dorsum before angle, it is deeply indented, by the intervening white fascia, on its inner edge a third above dorsum. Beyond it is the ocellic spot which is a well-defined rectangle of shining cream-white scales, divided by a dark vertical line and two black lines above. Costa before middle is marked with short dashes of brown and white; beyond middle, with four geminate oblique white lines on brown ground, the inner pair of lines end under the beginning of a third pair, the second and third pair unite and end under the fourth pair. Cilia speckled brown on white.

Hindwing: smoky fuscous, cilia paler, beneath the same but a spade paler.

Underside forewing: darker smoky fuscous, costal marks repeated.

Six specimens; Stockton, Utah, June 29th to July 3d; Tom Spalding.

***Eucosma sosana* sp. nov.**

Expanse 16-19 mm.

Head, antenna and palpi pale clay-yellow, latter dusted with a shade darker externally; thorax clay-yellow, atomized with pale fuscous; abdomen and legs clay-yellow, latter banded and dusted with brown.

Forewing: clay-yellow, with basal area, one broad fascia and a shade on upper third of wing of a light olivaceous fuscous. This darker color is nearly uniform wherever it occurs, and is composed of olivaceous fuscous scales, with clay-yellow tips, giving an atomized or powdered appearance. The upper third of wing is of this darker shade, interrupted on the inner half of costa by five or six clay-yellow geminate dashes, those close to base are somewhat obscure, and in the outer half of costa by four strongly-defined clay-yellow geminate dashes; the dark shade between these outer dashes are somewhat ochreous below the costa; the outer dash of the second pair and inner dash of the third pair join together below costa and form a V, the lower point is tipped with golden-metallic scales; the outer dash of the third pair is prolonged beneath the fourth pair, and its lower half is leaden-metallic. From the middle of the dorsal margin a broad fascia of clay-yellow, slightly oblique, extends to upper third of wing, it is broader on dorsum than above, a horizontal line of yellow leaves it near upper end and lies below the first and second pair of geminate streaks in outer half of costa. The ocellic spot is large, clay-yellow scales, slightly shining, with in some specimens a horizontal black dash in middle and another near upper edge, two black dots occur on before the upper end of ocellic spot in other specimens. Cilia fuscous outwardly, speckled within.

Hindwing: light brownish-fuscous, cilia whitish fuscous; underside grayish, shaded with light brownish-fuscous below costa.

Underside forewing: smoky brown, costal spots repeated, yellowish before termen, with very dark terminal line.

Eight specimens; Stockton, Utah, May 23d to Aug. 2d; collected by Tom Spalding.

***Eucosma totana* sp. nov.**

Expanse 14-19 mm.

Head, palpi, antenna, thorax, abdomen and legs ashy-white, outside of palpi shaded with pale fuscous, and dots of the same color on patagia, legs banded and powdered with pale fuscous.

Forewing: ashy-gray, lightly marked with brown shades, varying from light brown to blackish-brown. There is a dark shade through middle of wing, angulated at inner third obliquely inward toward dorsum, and forming the outer edge of basal area, but only defined in the middle of wing; a few dark dots connect this shade along middle of wing with a similar dark shade between end of cell and termen above middle of wing. The ocellic spot is concolorous, but with shining scales on sides and two or three black horizontal lines; before this spot on dorsum, and outlining it internally, is a small triangular dark spot. On the male costal fold are four or five dark dashes, between the fold and middle, two or three dark lines, one of which is as long as a third the width of wing; beyond the middle are three large dark spots, between each two a slender dark line; an oblique dark dash is in the apex. There are several dark dots below fold on internal third. Cilia white, dotted with gray internally and externally.

Hindwing: pale fuscous, cilia whitish; underside the same, with a few fuscous dots in apex.

Underside forewing: darker, brownish-fuscous, with costal spots repeated and a pale line before the darker terminal line.

Five specimens: Stockton, Utah, July 1st to Sept. 1st, Tom Spalding; South Utah, July, O. C. Poling.

***Eucosma vovana* sp. nov.**

Expanse 16-23 mm.

Head: pale clay-yellow, with a few brown scales over eyes and in front; palpi cream-white, with two brown spots on side of brush above, outward end of brush more or less tinged with fuscous, apical joint black, with a tiny dot of whitish at extreme end; thorax white, with two brownish mottlings across front and middle; base of patagia dark brown; abdomen and legs pale yellowish-white, latter banded and dusted with brown; antenna white, finely ringed with dark brown.

Forewing: white; the markings are blackish-brown. There is a strigulation of dark scales in the base succeeded by a narrow white fascia, beyond which is a wider dark fascia, the outer edge of which starts from inner fourth of costa and is slightly oblique to fold, it broadens at fold and is then straight to dorsum; beyond it is a white fascia of about equal width, sharply defined inwardly. In the middle of costa is an oblong dark spot, its lower end reaching to middle of wing, beyond it, covering end of cell in middle of wing, is a rounded dark spot, below the latter on dorsal margin is a pair of rounded spots; these spots form a dark fascia from middle of costa to dorsal margin before the ocellus, but they are separated by white extensions of the white fascia before them. There is a wavy narrower dark fascia from costa at outer fifth to middle of termen.

Beyond the base in each of the white and dark fasciæ are three dark dashes on costa, and on the outer half are three large dark spots and as many narrow ones, with a large one in apex. The ocellus is white, with a few shining scales at side and two black dots on inner edge. The dark fascia and spots are usually outlined in blackish-brown, with strigulations of the same color, on a paler brown ground. Cilia white, preceded by a gray line, and with the gray cutting into apex and below apex.

Hindwing: pale fuscous, cilia a shade paler; underside the same.

Underside forewing: smoky fuscous, costal spots repeated.

Thirteen specimens: Stockton, Utah, Aug. 2d to Sept. 3d, Tom Spalding; Bear Creek, Morrison, Colo., E. J. Osler; Yuma Co., Ariz., desert, March 26th, from J. B. Smith; Glenwood Springs, Colo., Aug. 24th, Dr. Barnes; Amarillo, Tex., Aug. 30th, Cockerell.

Cotype in U. S. Nat. Mus.

This species is close to *E. shastana* Wlsm. and *E. biquadrana* Wlsm.

***Eucosma subinvieta* sp. nov.**

Expanse 30 mm.

Head and thorax creamy-white, patagia pure white; palpi creamy-white, dusted with fuscous externally; antenna yellowish-white; abdomen light gray, tuft ochreous-gray; legs white, dusted with brownish-fuscous.

Forewing: pure white, this ground color occurs in a broad fascia in middle of wing from dorsal margin to above middle, it narrows above the middle of wing and the upper third is overlaid with fuscous strigulations from costa; there is a white patch on dorsum at base below fold. There is an obscure fuscous fascia from inner fourth of costa, curving inward below middle to inner fifth of dorsum, it is marked in the middle of wing by a dentate line of black-brown scales. A fuscous fascia crosses wing from beyond middle of costa to dorsal margin, its inner edge is obliquely outward to middle of wing, then slightly inward to dorsum, it covers the outer third of dorsum. Beyond it on costa is a white patch in which are three dark brown dots, and a larger one in apex, between each two is a tiny brown dash. The ocellus is large, covering the area between the dark fascia and termen, it is mottled white and fuscous, with several small clusters of black scales on the inner side; above it are two curious characters in black and brown scales, the outer like the small letter h, and the inner like an inverted L. The cilia is mottled brown and fuscous.

Hindwing: whitish-brown, darker at apex; cilia white, with an outer and inner fuscous line; underside whitish, streaked with fuscous below costa, from base to apex.

Underside forewing: mottled white and fuscous, principally white below fold, costal dots repeated, cilia preceded by a white line and white dashes at veins 1b and 4.

Williams, Ariz.

Type in my collection; other specimens in U. S. Nat. Mus.

These specimens in the National Museum have been incorrectly identified as *E. invicta* Wlsm. While their general appearance is similar, they can easily be separated by the Indian-red head and palpi of *invicta*. Have thirteen specimens of the latter.

***Eucosma palousana* sp. nov.**

Expanse 20-24 mm.

Head and thorax very pale ochre. Palpi same internally stained with fuscous on outsides; tuft on second joint long and loosely scaled, extending beyond apex below and concealing outer joint, except the extreme tip visible from above; length beyond head a little more than the thickness of head. Antennæ white, annulated with fuscous. Abdomen whitish, end of anal tuft stained with light fuscous. Legs pale ochreous.

Forewing: costa very slightly arched; apex shortly rounded; termen straight from 7 to 3; male costal fold, less than a quarter, narrow, appressed, scales roughened.

Color: very pale ochreous, with basal and dorsal spots and streaks on costa and in apical portion of a light brownish-ochreous. On dorsum, one quarter from base, a narrow fascia arises, continuing obliquely with parallel sides to upper edge of cell; the basal area enclosed is ground color, and beyond this semi-fascia is a broad band of ground color, outwardly defined on lower half by a brown spot on dorsum before angle, this spot is broadest on dorsum and has a hump above on its outer half, altogether about one-third of width of wing. The costal fold is brown, sprinkled with fuscous; the costa beyond fold is evenly marked with about fifteen light brown spots, the three or four before middle are short

oblique dashes; at the middle the dash continues obliquely to top of cell; in the outer third the streaks continue obliquely across the wing, the inner one to the anal angle, but very often broken; the second beyond this is enlarged into a flattened subapical spot, then continuing as a line into termen above angle; above and beyond this the streak before apex crosses to termen below apex. In the apex is a rather large spot, darker than any of the costal dashes. Ocellic patch illy defined; a rather large irregular area of shining ochreish scales, enclosing a brown spot, in the center of which are two dark brown dots, vertical to each other. The pale ground color is more or less strigulated with the darker shade of brown. Cilia ground color, heavily dotted with darker fuscous, with a whiter streak above middle, above and behind angle.

Hindwing: light smoky fuscous, cilia paler; underside same but lighter.

Underside forewing: light cinereous-fuscous, a large dark fuscous apical spot. Cilia dirty fuscous.

Five specimens; Pullman, Wash., July 11th, Aug. 10th, and Sept. 18th. One bearing label "Wash. Exp. Sta. No. 533; collected by C. V. Piper; and five specimens, Los Angeles, Cal., Aug. and Oct., "Through C. V. Riley." These last five are much more heavily overlaid with dark brown; they are also larger, the females expanding 24 mm. and males 20 mm.

Cotype in U. S. Nat. Mus.

### ***Eucosma immaculana* sp. nov.**

Expanse, ♂, 26-28 mm.; ♀, 22-27 mm.

Head, palpi, thorax, forewings above, abdomen and legs very light ochreish, with a pinkish tinge. The pink shade is more intense on outside of palpi, front surfaces of anterior legs and around eyes. Palpi with rather long scales projecting in front of apex below, the point of which is only visible from above and projecting nearly twice thickness of head beyond it; very moderate crest on head.

Forewing: including cilia pale pinkish-ochraceous. Male costal fold narrow, appressed, about one-fifth length of wing, rather a darker shade of pink than balance of wing, with a narrow costal shade of ochreous, this streak extending almost to apex along extreme edge of costa. No marks, lines or dashes either on wing or costa.

Hindwing: light ochreish-fuscous, cilia bleached straw color.

Forewing beneath: shining light yellowish-fuscous, cilia paler and stained with pink at apex and below middle.

Underside hindwing: same color but a shade paler.

Four specimens: two male and three female; Pullman, Wash., Aug. 9th to 24th; collected by C. V. Piper. One specimen bears an extra label reading "Wash. Exp. Sta. No. 515."

Cotype in U. S. Nat. Mus.

The shape of the wings of this species and the general structural appearance is like *Eucosma crambitana* Wlsm., and I would place it in the list following the group with silver or white bars.



***Eucosma johnsonana* sp. nov.**

Expanse 14-15 mm.

Head: with compact tuft between eyes and projecting forward, rounded on top, scales of moderate length; color dull ochre, suffused with pink back of and beneath eyes. Palpi with flattened compressed tuft on top largest about middle of second joints, thence rounded to outer joint, the tip of which is well exposed; color: salmon-pink, outer joint darker and tipped with ochre. Antennæ simple in male and female, grayish-fuscous, suffused with pink, annulations darker. Thorax and patagia salmon-pink, fading into ochreous posteriorly. Abdomen and legs pale ochreish, anterior tibia pink in front.

Forewing: costa nearly straight, very slightly and evenly arched, apex rounded, termen straight to 3, angle rounded, dorsum straight. Male costal fold little more than one-third length of ring, narrow, appressed. Pale ochreish, shaded with salmon-pink along costa, and a well-defined basal patch of this color. The basal patch of pink is most pronounced on dorsal half of wing and extends to beyond inner third, it is outwardly defined by a narrow band of very dark brown and black scales from dorsal margin to middle of wing, slightly oblique inwardly (*i. e.* nearer base at middle than at dorsum). A well-defined band of pink from base to apex on costa and extending down to upper vein of cell and following line of 7 into apex. A triangular shade of ochreish-pink is below this band in outer half; this shade is continued as a narrow line curving above ocellic spot and enlarging on termen, between apex and ocellic spot, into a smaller triangular spot. Ocellic spot large, rounded, occupying half width of wing; pale ochreish, crossed by three slightly shining, whitish, vertical lines, the outer curves inward at the top and there joins the inner. A few blackish scales on the lower ends of each of these lines, and a few scattered blackish scales above ocellic spot. Cilia very pale ochreish, with a double line of black scales from below apex to above anal angle. The costa is not marked with any distinct lines, but it as well as the whole of the wing is very faintly mottled with scales slightly darker or slightly lighter than the prevailing shades. In female specimens the blackish dorsal semi-fascia is broader and there are more separate black scales in the ocellic patch and above it.

Hindwing: whitish-fuscous, shading into smoky fuscous at apex and termen. Cilia white, preceded by a dark fuscous, then by a narrow whitish line.

Forewing: beneath fuscous, pink along costa, whitish below cell and 2, cilia gray.

Hindwing: beneath pale fuscous or light gray, cilia whitish.

Five specimens: one female, Seattle, Wash., red ink number 27; collected by O. B. Johnson; one female, Victoria, B. C., Rev. Geo. W. Taylor; one male and one female, Henry Edwards' collection, No. 14,720, and bearing small labels "3844 Nevada"; one male, Henry Edwards' collection, Vancouver Island.

Cotypes in U. S. Nat. Mus. and Amer. Mus. Nat. Hist.

***Eucosma hopkinsana* sp. nov.**

Expanse 14.5-17 mm.

Head, palpi and thorax pale greenish. Head with flattened tuft or crown, above eyes and smaller tuft above face between base of antennæ; a few darker fuscous scales on top of head. Palpi: tufts flattened, compressed, moderate,

speckled with black, except on inner sides; outer joint half as long as second, exposed, dark at base. Antennæ slightly dentate, whitish-green, annulated with black. Thorax more of a solid pale green, patagia whitish green. Abdomen light fuscous, segments darker anteriorly, anal tuft cinereous. Legs light gray or pale fuscous, marked with blackish-brown on anterior tibia, annulations on anterior tarsi and a spot of same on posterior tibial tufts.

Forewing: costa slightly and evenly arched, male costal fold nearly half length of wing, moderate in width. Apex rounded, termen slightly concave between 3 and 7; dorsum slightly rounded. Color: whitish-gray, overlaid with shades and lines of pale green, fuscous and black. A median spot of black at base with green center; an oblique black dash on inner third of dorsum to middle, defining basal area, above it, obliquely inwardly, a shade of greenish fuscous, not reaching costa; a quadrate dark spot on dorsum before angle, this spot is slightly oblique, is outlined inwardly and outwardly with black, between these lines it is mottled green, whitish and gray. Between this spot and inner dorsal dash the ground color is paler and forms a light fascia on lower half, but not defined above middle. Costal fold marked with eight inwardly oblique short black dashes. Beyond fold, costa is marked with four quadrate dark spots, each outlined with black and greenish between the black lines, the third spot before apex sends an oblique black line into termen below apex, and an oblique line of the same color from inner spot obliquely to dorsal quadrate spot. A preciliate row of five greenish spots, each outwardly outlined with black. A cluster of green scales above dorsum in pale fascia between the two dark dorsal spots and a similar cluster above ocellic space. The ocellic spot is not defined. An obscure, inwardly-oblique, blackish shade from costa spot before apex towards quadrate spot on dorsum, ending abruptly at vein 7, and separated from the dorsal spot by ground color. In very strongly marked specimens, no doubt these spots may appear as a blackish, interrupted fascia. Dorsal margin marked with seven or eight spots of fuscous, greenish and black. Cilia long, gray, speckled with fuscous.

Hindwing: cinereous gray, darker at apex and before termen, cilia paler.

Forewing: beneath blackish-fuscous, streaked with gray along costa and termen, cilia gray, with five or six small round dark gray dots.

Underside hindwing: pale shining gray, cilia same. This description is principally from the female, in which the black lines and scales are the more pronounced than in the males, the black of the female is more of a dark fuscous, and there are more of the greenish scales scattered over the ground color. There seems to be no difference in the position and shape of spots, lines and fascia.

One male, one female: Hoquiam, Wash.; bred from *Picea sitchensis*; breeding labels "2119a. Hopk., U. S." and 40,370<sup>1</sup> Hopk. U. S.;" Burke, collector. The food plant label of the first bears an ? mark. One male, same locality and collector, labelled "July 21, 1904, flying."

Cotype in U. S. Nat. Mus.

#### ***Thiodia radiatana* Wlsm. and allied species.**

The little group of species, including *radiatana* Wlsm., *formosana* Clem., *ferruginana* Fern., and *aspidiscana* Hbn. have been hopelessly

mixed in every collection I have seen, which is partly accounted for by reason of the fact that the females are usually so unlike the males that it has been easier to refer them to another species than to associate them together. I have been successful in accumulating very long series of both sexes of each species, including four new species which are described below, and the following notes will doubtless be helpful in arranging them hereafter. For the purpose of comparison the males and females are treated under different heads.

**T. radiatana** Wlsm. ♂.—Forewing: whitish-fawn color, with a brown-ochreish streak from base to termen below apex, the veins beyond cell outlined with the same color, ocellus not well developed.

Hindwing: light fuscous-brown.

**T. essexana** Kearf. ♂.—Forewing: paler than *radiatana*, more of a bleached straw color, median brown streak darker, veins beyond cell not distinctly outlined with brown, ocellic spot well defined and encircled by brown.

Hindwing: gray fuscous.

**T. umbrastriana** Kearf. ♂.—Forewing: a shade darker than *radiatana*, median streak obscure, the entire outer third suffused with brown-ochreish, except the costal spot area, ocellus not strongly defined.

Hindwing: dark smoky brown.

**T. roseoterminalis** Kearf. ♂.—Forewing: similar to *umbrastriana*, but a paler brighter color, median streak nearly or quite obsolete, suffusion in outer third of a bright burnt-sienna shade, ocellus not distinct.

Hindwing: paler than *umbrastriana*, or the same shade as *radiatana*.

**T. awemeana** Kearf. ♂.—Forewing: like a diminutive *distinctana*, but darker, median streak broader and to middle of wing only.

Hindwing: light fuscous brown, similar to *radiatana*.

**T. ferruginana** Fern. ♂.—Forewing: reddish-ochreous, paler at base. This is the smallest in both sexes of the series.

**T. formosana** Clem. ♂.—Forewing: inner two-thirds blackish-brown, outer third ochreous, costal metallic streaks do not connect with ocellus.

Hindwing: dark smoky brown.

**T. aspidicana** Hbn. ♂.—Forewing: similar to *formosana*, but less ochreous in outer third, and a strong metallic line from costa to inner metallic bar of ocellus. I have five European specimens of this species, the name of which has been so frequently applied to American specimens, I think erroneously, as I have never seen an American specimen having all of the characters common to the European.

**T. radiatana** Wlsm. ♀.—Forewing: brownish-ochreous, with the median streak of a darker brown, ocellus not distinct.

Hindwing: darker brown.

**T. essexana** Kearf. ♀.—Forewing: inner third brownish ochreous, outer third darker brown, ciliate edge gray, ocellus much more distinct than in *radiatana*.

Hindwing: reddish-brown, lighter and brighter than *radiatana*.

**T. umbrastriana** Kearf. ♀.—Forewing: lighter ochreous-brown than either of the above two, cilia ochreous.

Hindwing: as dark as *radiatana*.

**T. roseoterminalana** Kearf. ♀.—Forewing: darker than *umbrastriana*.

Hindwing: darker, cilia more ochreous.

**T. awemeana** Kearf. ♀.—Forewing: very much like ♂ *formosana*.

Hindwing: darker than any of the preceding, cilia whitish.

**T. ferruginana** Fern. ♀.—Forewing and hindwing: very little different from its male.

**T. aspidiscana** Hbn. ♀.—Forewing: like the male, hindwing much darker.

The most common mistake in identification has been to name all of the pale fawn or straw-colored males as *radiatana* and all of the reddish females as *ferruginana*, notwithstanding they are nearly double the size of the latter; and sometimes the females of *radiatana* have been named as female *formosana*. *Formosana*, in its turn, or, more frequently, the males, are usually named *aspidiscana*.

#### **Thiodia essexana** sp. nov.

♂.—Expanse 20–26 mm.

Head and palpi speckled gray, latter paler internally; thorax pale straw, with brown central and lateral streaks, patagia brown; antenna light grayish fuscous; abdomen fuscous, anal tuft paler; legs ochreous-gray, dusted with brown.

Forewing: bleached straw color, with a brown streak from base near dorsum to outer margin, it spreads there and circles the ocellus on its outer and lower edge, terminating in a large spot on dorsum before ocellus; from its outer end a spur goes up into apex. The ocellus is nearly round, and its pale straw color, well defined by the brown which surrounds it on all sides, except a small distance on its inner edge, where it connects with the same shade of the lower third of wing; the scales on the sides of the ocellic spot are slightly shining, and it is shaded with slightly darker scales over the veins which are beneath it. The outer two-fifths of costa contains three light brown dashes, outlined by paler, somewhat shining straw color lines, running together in a line parallel to costa, and concave above the ocellic spot. Cilia shining leaden-gray, with an internal line speckled fuscous and gray.

Hindwing: grayish-fuscous, darker around edges, cilia whitish-fuscous, with a dark basal line and a darker intermediate line; underside: ochreous-fuscous, dashes below costa and terminal line.

Underside forewing: coppery-fuscous, fawn along costa and gray along termen, straw color below fold.

♀.—Expanse 17–22 mm.

Forewing: brownish or dark reddish-ochreous, a slightly darker median shade from base running into the blackish-brown shade, which covers the outer third. Ocellic spot: of two curved bars of shining leaden scales, shaped as two halves of a circle but open top and bottom. Costal spots absent, but the boundary lines of shining leaden present, with a few scales of same color in middle of termen. Cilia dark brown and shining fuscous, preceded by a line of gray scales.

Hindwing: reddish- or Indian-brown, with a coppery reflection, darker around edges, cilia paler, with a darker basal line.

Twelve ♂ and six ♀ specimens, all collected near Caldwell, N. J. I have also bred this species from larvæ living in the main stem of *Aster patens* throughout the winter.\*

***Thiodia umbrastriana* sp. nov.**

♂.—Expanse 16–18 mm.

Head: pale fawn color, mixed with brown scales, thorax the same, with brown central and lateral lines, patagia paler; palpi gray, whitish internally; antenna pale fawn, darker at base; abdomen shining fuscous, anal tuft fawn; legs whitish-fawn, dusted with brown.

Forewing: light ochreous, straw color, with a diffused median streak of pale umber from base to outer third, where it joins the shade of the same color covering outer third of wing. The ocellus consists of a double bar of leaden scales, joined below in shape of U. The costal lines are not distinct as in the preceding species, and a streak of the ground color runs above the dark shade nearly to apex but towards its outer end becomes brown. Cilia ochreous-fuscous, preceded by a line of gray and black dots.

Hindwing: smoky fuscous, cilia whitish, preceded by a darker line; underside shining ochreous-white.

Underside forewing: brownish-ochreous, paler along costa and a darker shade in upper half of cell.

♀.—Expanse 16–18 mm.

Head: as in male but darker, and containing gray scales; palpi, thorax and legs darker.

Forewing: similar to male, but very much darker and more clouded with the umber color, which is not confined to outer third.

Hindwing: dark coppery smoky brown; cilia ochreous-brown, preceded by a darker line.

Eighteen ♂ and five ♀ specimens: Aweme, Man., June 9th to 22d, Criddle; Cincinnati, Ohio, May 23d to June 6th, Miss Braun; Beaver Co., Pa., F. A. Merrick.

***Thiodia roseotermianana* sp. nov.**

♂.—Expanse 17.5–21 mm.

Head: grayish-brown; palpi gray, whitish internally; thorax pale fawn, darker in front and behind, patagia darker at base; antenna grayish-fuscous; abdomen yellowish-fuscous, tuft paler; legs pale fawn, dusted with darker.

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\* Recorded in Journal of New York Entomological Society, Vol. XI, Sept., 1903, p. 159, as *T. radiatana* owing to a wrong determination.

Forewing: inner two-thirds very pale whitish-fawn, median streak almost obsolete, outer third of a rosy-coppery hue; a shade of darker fawn below costa in outer third, in which the costal spots and lines are but faintly observable. The ocellus is nearly obsolete, a shade of fawn, hardly differing from the color around it, enclosed on both sides with faintly metallic bars, with a pinkish tinge. Cilia light pinkish-brown.

Hindwing: light smoky brown, cilia paler, preceded by a darker line; underside whitish-ochreous.

Underside forewing: pale ochreous-brown.

♀.—Expanse 16-19 mm.

Head and thorax reddish-brown; palpi dark gray, whitish internally; antenna and abdomen reddish-fuscous; legs ochreous, dusted with brown.

Forewing: very like female of *umbrastriana*, but of a brighter ochreous-red.

Hindwing: dark smoky brown; cilia ochreous, preceded by a darker line; underside reddish-ochreous.

Underside forewing: dark smoky ochreous-brown, paler along costa.

Twenty eight ♂ and twelve ♀ specimens: Cincinnati, Ohio, May 19th to 29th, Miss Braun; New Brighton, Beaver Co., Pa., May 18th to June 3d, F. A. Merrick; Wisconsin.

### ***Thiodia awemeana* sp. nov.**

♂.—Expanse 17-19 mm.

Head: pale fawn, with ashy-gray scales in tuft above eyes and front; thorax pale fawn, with a blackish central and lateral line; patagia fuscous at base; palpi fuscous-gray, paler within; abdomen grayish-fuscous; legs fawn, dusted with brown.

Forewing: very pale fawn, median streak blackish brown, from base at dorsum to fold at middle of wing; outer third of wing, surrounding ocellic spot, dark brown, overlaid with black. Ocellic spot fawn, with metallic side bars, joined below; costal spots fawn, costal lines shining pale fawn, before apex a metallic line, becoming leaden below, parallels the termen to middle of wing. A shade of the dark outer color reaches costa before the costal lines and forms a narrow darker fascia to anal angle. Cilia blackish-fuscous, divided by a pale fawn line and a narrower pale basal line.

Hindwing: light brownish-fuscous, darker at apex; underside pale gray.

Underside forewing: grayish-brown, lighter on outer half of costa.

♀.—Expanse 17-19 mm.

Marked similar to male, but very much darker, not reddish as in the females of the three preceding species. The outer third is dark ochreous and dark brown, overlaid with black. The metallic leaden line from before apex joins the outer bar of ocellus. The light fawn of inner two-thirds is heavily overlaid with brown. Cilia blackish-fuscous; underside blackish-brown, ochreous-brown along costa.

Underside forewing: same as hindwing.

Eleven ♂ and two ♀ specimens: Aweme, Man., May 20th to June 29th, Norman Criddle; Beulah, Mann., A. J. Dennis.

**Thiodia annetteana** sp. nov.

Expanse 14-16 mm.

Head, palpi and thorax yellowish-fawn; antenna brown; abdomen light fuscous, legs whitish-yellow, dusted with fuscous.

Forewing: inner half dull yellow. The outer half is occupied by an elaborate ocellic spot, with metallic lines from costa. The ocellus is circular, filling the outer fourth of wing, on the lower half are two horizontal rows of square black spots, with a trace of a third line below, the upper half is brownish-fuscous, speckled with whitish scales. A silvery-metallic line in the form of a half circle bounds the upper half, it is interrupted at highest point, where a short metallic line from costa connects with the innerside; the outerside ends in middle of termen, where it nearly joins a vertical metallic line from apex. There is a vertical curved line on inner side of lower half of ocellus, and a shorter line on the outside, with a short one between the two middle pairs of black dots; the two former of these roughly form a complete circle around the ocellus. Beyond middle of costa a metallic line crosses the wing vertically, reaching nearly to dorsum, a similar but shorter line starts from costa behind the first one, but only reaches middle of wing; these two lines form the inner boundary of the ocellic ornamentation, between the lines and above the upper metallic circle the color is same as inner half of wing, but dotted heavily with gray along the edges. Cilia speckled fuscous and gray at base, outwardly shining gray; underside silvery-gray.

Underside forewing: light coppery-brown, costal spots faintly repeated.

Seven specimens: Cincinnati, Ohio, April 2d to 23d, all collected by Miss Annette F. Braun, whose name will fittingly honor this dainty species. It is closely allied to *T. refusana* Walk., and closely resembles *Eucosma circulanana* Hbn.

**Thiodia asphodelana** sp. nov.

Expanse 25-30 mm.

Head and palpi brownish-gray; antenna silvery-gray; thorax gray, finely speckled with fuscous; abdomen grayish-fuscous, tuft cinereous; legs gray, banded and dusted with fuscous.

Forewing: light brownish-fuscous, the outer half of the rather long overlapping scales ashy-white, giving the wing a frosted appearance. The white scales are not as abundant below the middle of the wing, causing a darker shade which crosses fold and ends before ocellus. The latter is high up in middle of termen and consists of two or three short vertical lines of iridescent scales, bounded on the outside by three black dots. The costal marks are obsolete, but below costa, above ocellus, are a few iridescent scales, arranged as would be the ends of oblique costal lines. On the border, below apex, is a short line of shining scales; terminal line brown; cilia whitish-fuscous, with a white line at base, followed by a darker line.

Hingwing: smoky brown, cilia white, with white followed by brown basal lines; underside the same, but a shade paler, and whitish along costa; underside very dark, smoky brown, whitish along costa and termen.

Four specimens: Durango, Colo., June 6th and July 2d, Dr. Dietz; South Utah, July, O. C. Poling; Calgary, Alberta, Head of

Pine Creek, July 2d, F. H. Wolley Dod, through Dr. Fletcher. This last specimen also bears label "Crambid fide Smith, Dup. of 36 to him Feb. 1900."

***Thiodia baracana* sp. nov.**

Expanse 15-19 mm.

Head: light brown on sides, whitish-brown above and in front; palpi former shade outside, latter shade within; antenna creamy-white; thorax light brown, a spot of white on base of patagia, and a circle of white on posterior end; abdomen yellowish-white; legs yellowish-white, dusted with brown.

Forewing: basal area extending beyond fourth, outer edge vertical, straight, except one indentation below fold, mottled light brown, darker in outer half and edged with dark brown. It is followed by a broad white fascia, the inner half of which reaches costa; a third below it broadens horizontally, equaling the width of basal area, thence in a dentate line to dorsal margin. This is followed by a light brown fascia, well defined on lower two-thirds of wing; in the upper third it runs obliquely inward to costa, and on inner edge below costa sends a short line into the white at its narrowest part; there is a dot of raised black scales on its inner edge just above fold; the width of this brown fascia is equal to width of the white ocellic patch beyond, the latter is large, with straight vertical edges, and reaches to upper third of wing, it is dull white in the middle and shining white on the sides, between its upper half and termen is a wedge-shaped brown streak. The outer half of costa is marked with three brown spots, increasing in size outwardly and a fourth brown spot in apex, before the first and between each pair is a broader white spot, divided by a narrow brown oblique line. Between these costal spots and the upper edges of the brown and white fasciæ is a horizontal strigulation of gray and lilaceous-metallic lines. Antenna white, speckled with fuscous and brown on upper half.

Hindwing: light pinkish-gray, cilia white, with a darker basal line; underside the same.

Underside forewing: light smoky fuscous, costal spots repeated.

Six specimens: Stockton, Utah, Aug. 21st and Sept. 5th, Tom Spalding; Denver, Colo., Oslar; Colorado, Nos. 2133 and 2147, Gillette.

Cotype in U. S. Nat. Mus.

***Thiodia caracana* sp. nov.**

Expanse 18-22 mm.

Head and palpi fawn-brown, latter paler within; antenna grayish-fuscous; thorax fawn-brown, with a patch of white on posterior end; thorax cinereous, tuft yellowish; legs whitish, banded and dusted with blackish-brown.

Forewing: brown, mottled with gray and white; two large square white dorsal spots, one in middle of wing, reaching to upper third, dentate on inner edge, an outer spur on fold from outer edge; the outer white spot is a little narrower than the inner and is in ocellic space, with straight vertical edges, it contains two or three black dots and a small patch of grayish scales, with a brown centre in upper part. The brown patch separating these white spots is dotted with white,



gray and black, especially black along the edges. Before the middle spot the outer half of the dark basal area is similarly dotted with black. The costa is marked with fine white lines its entire length, there are six in the basal area, four over the middle dorsal white spot, beyond these are four pairs of geminate white lines, becoming shining gray below costa and obliquely extending to the upper edges of the two outer dark and white dorsal patches, the gray streaks are on an obscure dark brown ground. The geminate streaks are separated by clear brown wedge-shaped streaks, the widest separating the outer geminate lines from a brown lunate apical spot, the latter is separated by the outer end of a costal line, with a similar brown streak between ocellic spot and termen. Cilia white at angle, with a fine marginal gray and brown line, which increases above middle and overspreads the cilia, becoming smoky black at apex.

Hindwing: light shining fuscous, cilia paler; underside the same on lower half, becoming much darker above.

Underside forewing: smoky brown, with white geminate costal spots.

Five specimens: Denver, Colo., Aug. 3d and 6th, A. J. Osler; Stockton, Utah, June 29th, Tom Spalding; Pueblo, Colo., Aug., H. W. Nash.

***Thiodia daracana* sp. nov.**

Expanse 16-18 mm.

Head: blackish-brown over eyes, cinereous above and in front; palpi grayish-brown; antenna and thorax fuscous; abdomen fuscous, anal tuft yellowish; legs brownish-white, dusted and banded with shades of darker brown.

Forewing: fuscous, heavily overlaid with white, giving a gray appearance. The white scales are closer together, forming an obscure fascia on lower half of wing beyond middle. The ocellic spot is white, with shining white scales on side, and two short superimposed horizontal black lines. Between middle and apex the costa is marked with five pairs of (geminate) lines, the three outer pairs run together beneath the subapical spot, sending a spur into termen beneath apex, below the costa these lines are slightly iridescent. The geminate lines are separated by darker fuscous-brown spots on costa, and there is a small triangular patch of the ground color, nearly free from white scale on dorsum below ocellus. Cilia gray, speckled with fuscous and with a narrow white outer line.

Hindwing: smoky brown, lighter above dorsal margin; underside grayish-fuscous, with a purplish reflection.

Underside forewing: fuscous, paler below.

Ten specimens: Placer Co., Cal., April 20th to May 1st, A. H. Vachell.

***Thiodia raracana* sp. nov.**

Expanse 11-14 mm.

Head: cream-white, shaded with light brown on tufts above eyes; palpi cream-white, with a dot of fuscous at base and one at middle of second joint outside; antenna cream-white, shaded with fuscous in front; thorax salmon-pink, ochreous in front; abdomen fuscous, anal tuft pink; legs whitish, banded and dusted with brown and black.

Forewing: light reddish-ochreous in the brightest specimens to a reddish-fuscous in the darkest. The color is darker in the middle of the wing and palest below costa before middle and at apex. The ocellus is the most conspicuous marking, it reaches to middle of wing, and is as broad as high, cream-white in the middle, with vertical side bars shining white, on the dull white are two hori-

zontal black lines, sometimes joined at their outer ends and sometimes broken into dots, and occasionally with a dot or two below—the beginning of a third line. The costa is lightly marked with whitish oblique dashes, these beyond middle, five in number, are geminate, with faint leaden-metallic lines separating the two parts of each, from the middle one of the five a leaden line runs to similar shorter streak from spot before apex. The ground color between ocellus and these costal streaks is more ochraceous than pink. Cilia very pale fawn, becoming brown at apex and with a speckled row of gray at base.

Hindwing: shining grayish-fuscous, cilia the same; underside of both wings the same, forewing a shade darker.

Sixteen specimens: Montclair and Essex Co., N. J., Aug. 8th to 26th, with net and at light trap; Kentucky (Covington), Aug., A. Busck; Washington Co., Ark., July, A. J. Brown; Hastings, Fla., Oct., A. J. Brown. One specimen from U. S. Nat. Mus. labelled "Salidago, 11/884," and "From Glovers coll. 83."

Cotype in U. S. Nat. Mus.

This species has been incorrectly named as *Semasia ochreicostana* Wlsm. by Dr. Dyar, in my collection and others.

### **Proteopteryx laracana** sp. nov.

Expanse 15-17.5 mm.

Head, palpi, antenna and thorax yellowish-gray, latter speckled with fuscous; abdomen and legs yellowish-gray, latter dusted and banded with dark brown.

Forewing: no male costal fold; shining whitish-gray, somewhat mottled with blackish-brown. There are two conspicuous blackish-brown characters, one a streak in middle of wing from base nearly to middle, the other a crescent-shaped fascia from middle of costa to middle of wing, then turning and running into apex. The basal streak widens below at about a quarter from base, and beyond its outer pointed end it sends a more or less obsolete fine line along fold to anal angle. The lower edge of the crescent mark reaches below middle of wing at outer third, its upper edge is dusted at the upward turn; in the gray area enclosed by the crescent, are four large brown costal spots and four fine brown lines. The inner third of costa is marked by three oblique brown lines. The dorsal edged from inner fourth to angle is marked with brown dots. In the darkest specimens the basal streak connects with the crescent, and the lobe on its lower side reaches to dorsum; the outer end of crescent is also enlarged and separated from the inner portion by a line of ground color. Cilia gray, preceded by two dark basal lines, a white dash below apex.

Hindwing: silvery-gray, cilia paler, underside the same.

Underside forewing: gray below middle, smoky brown above, costal marks repeated.

Thirteen specimens: Cincinnati, Ohio, March 27th to April 10th, Miss Braun; New Brighton, Pa., March 27th to April 15th, F. A. Merrick.

This is one of several species in Mr. Merrick's collection, incorrectly identified as *P. spoliata* Clem. by Dr. Dyar.

**Proteopteryx maracana** sp. nov.

Expanse 14-16.5 mm.

Head and palpi grayish-fuscous; antenna blackish; thorax black, patagia grayish-fuscous; abdomen blackish-fuscous; legs yellowish-white, heavily banded with blackish.

Forewing: without costal fold in the male, whitish-gray, with a well-defined basal area, outer fascia and spot in apex of black and brown. The basal patch is to inner fourth on costa and dorsum, and to inner third below middle of wing, above the middle the edge is lightly indented and irregular. There is a transverse shade of gray in the middle of the patch, defining a strong dentate dark process from middle of base. The dark fascia crosses wing between middle and outer third, its outer edge to anal angle, it is inwardly shaded with gray on upper fourth, with a black line on costa between the edges, a shade of brown crosses it at middle. The apical spot is an extension of the large costal spot before apex, it extends nearly to middle of wing in the shape of flattened triangle, with the long angle horizontal. Between the dark basal area and dark fascia is a grayish fascia, marked with two brown dashes on costa and a brownish-fuscous streak running through its middle to termen, enlarging into a brownish-yellow spot on lower half. The ocellus is yellowish-gray, containing a few black dots, the inner vertical bar is shining leaden, broad and large, the outer bar of the same color is narrower and shorter. Beyond the dark fascia the costa is marked with three large geminate grayish-white spots; that before apex sends a few whitish scales to termen below apex. Cilia gray inwardly, blackish outwardly.

Hindwing: light smoky brown, whitish above cell, cilia pale, with dark basal line; underside the same.

Underside forewing: smoky brown, costal spots repeated.

Seven specimens: Cincinnati, Ohio, March 26th to April 10th; all collected by Miss Annette F. Braun.

**Proteopteryx haracana** sp. nov.

Expanse 14-17 mm.

Head, palpi, antenna and thorax hoary, speckled blackish-brown; abdomen shining gray; legs whitish, banded and dusted with blackish.

Forewing: without costal fold in male; gray, with a smoky black streak from dorsum at base to apex, obliquely across wing. The inner part of this shade is the basal patch, which is only defined on lower half of wing, it is continued above middle by narrow angulated streak to apex. In one very dark specimen the black shade covers all of the lower two-thirds of wing, before the ocellus, with a few whitish scales, outwardly defining the basal patch. The costal third is gray, evenly spotted with blackish-brown, there are seven or eight large dashes and about as many fine lines. The ocellus is large, atomized white on dark ground, with four short horizontal short lines superimposed and a few dots of black below, the side bars are shining. Before the ocellus and in the apex are olivaceous shades. The apical spot is rounded, of an olivaceous shade, edged with black above, the black edging turning over and continuing as a black subterminal line as far as the incision. Cilia fuscous, speckled with black and white.

Hindwing: very light smoky gray, darker around termen, cilia paler, with darker basal line; underside shining light gray, dotted with fuscous on costa.

Underside forewing: smoky black, costal dots repeated.

Six specimens: Hunter's Range, Pike Co., Pa., May 1st; collected by Alfred E. Lister.

**Proteopteryx faracana** sp. nov.

Expanse 18-19 mm.

Head and palpi coppery-brown; antenna gray; thorax bronzy-gray, patagia streaked with white; abdomen gray, anal tuft light ochreous; legs whitish, dusted and banded with bronzy-black.

Forewing: no male costal fold, light bluish-gray, shaded with ochreous below costa at base. The basal area and other marks are bronzy-black. The basal area is strongest below middle, where its outer edge touches dorsum at inner fourth and outer end at inner third in middle of wing. The lower half between basal patch and ocellus is bronzy-black, crossed by two horizontal whitish-gray lines, one on the fold and the other half way between fold and dorsum. From inner fourth of wing a streak of bronzy-black parallels costa one-third below to before apex. Above this streak is bluish-gray, crossed at inner fourth, middle and outer third by dark lines from costa, which run into the dark streak below. Between these the costa is dotted with short dark dashes. The three dark costal dashes before apex send strigulated lines, the inner, in connection with the ocellic black dots, as a continuous line to anal angle, the middle one to middle of dorsum, the outer one curves under apex. The apical spot is black, with brown center. The ocellic spot is large, shining gray on the sides, dirty white in center, with a vertical line of black dots. Between the ocellus and termen is a narrow band of speckled gray and brown, increasing in width above middle and running into apical spot. Cilia shining leaden.

Hindwing: light grayish-brown, cilia whitish, with darker basal line; underside the same, mottled with fuscous along costa.

Underside forewing: smoky gray, whitish on costa and dotted with brown.

Two specimens: Scranton, Pa., April 21st and 22d, A. E. Lister.

This may be a variety of *P. spoliata* Clem.

**Proteopteryx albicapitana** sp. nov.

Expanse, California specimens, 20 mm.; Pennsylvania specimen, 17 mm.

Head: with scales long and forming a flattened crest on top and in front, concealing basal joints of antennæ; the scales in front, on the sides of the head, around the eyes, the patagia and a narrow edging on each side of thorax are blackish-brown; from top of head to posterior end of thorax the scales are pure white. Palpi scarcely twice length of head, slightly depressed, flattened, lower edge of tuft in nearly a straight line from base to tip of outer joint, which is not quite hidden, but is obscured above more than below; scales above in a well-rounded hump. Color: outwardly dark brown, flecked with dark cinereous; within and above at base white, brown extending over the outer half of upper and lower edges and slightly encroaching on the paler color. Male antennæ slightly dentate, finely ciliated beneath, female antennæ simple, purplish-brown. Abdomen very pale brown or faded straw color, with a band of whitish scales on each segment. Legs same, annulated with brown. Abdomen of eastern specimen much darker, yellowish-fuscous.

Forewing: blackish- or dark purple-brown, excepting a pure white dorsal band about one-third width of middle of wing. This white band sends up into the ground color three spurs: first, at its beginning close to but not touching base; second, at inner third; and third, at outer third before ocellic spot. The white

spurs are rather acutely pointed, while the brown depressions between them are rounded. The white band is continued at anal angle through lower half of ocellic space and into cilia, which is pure white to the apex, excepting a dot of brown just below apex and on outer shade of brown in middle of wing. On the third white spur, just before ocellic space, is a large dot of brown scales, connected by scattering brown scales, with a similar but less conspicuous dot on dorsum. In eastern specimens these dark scales form a rather large triangular spot resting on dorsum and entirely interrupting the white band, excepting at its extreme upper edge. On extreme dorsal edge between this spot and base are twelve or fourteen rather evenly-spaced brown scales; two or three of the same are scattered over the upper ends of the first and second spurs. On the costa, between fold and apex, five or six geminated short dashes, these are almost obsolete on the western specimens. Costal fold about one-third length of wing, closely compressed, narrow; concolorous with upper part of wing, and bearing several geminate pale dots, which in the western specimens are reduced to tiny specks on extreme costal edge.

The dark color of the wing is more of a blackish-purple than brown, it is strigulated with short, fine, irregular, black, transverse lines, more distinct along costal and outer margins. Before the cilia a narrow line of more or less connected dark dots form a continuation of the line of dots on dorsal margin, and before this dark line on outer margin a narrow shade of the white continues up, nearly to apex, from the dorsal band.

Hindwing: light purplish-fuscous, cilia paler, with a lighter and darker line at its base; same beneath.

Underside forewing: purplish-brown, rather shining, costal and ciliate white spots repeated

Eight specimens: Nevada Co., Cal., Sept.; Kern Co., Cal., Oct.; Placer Co., Cal., Sept.; New Brighton, Pa., March 22d (F. A. Merrick).

Cotype in U. S. Nat. Mus.

The outer margin is very oblique, at an angle of about forty-five degrees from the dorsal line. In the California specimens the depression at end of veins 4 and 5 is barely observable, the margin being almost straight. The depression is more pronounced in the Pennsylvania specimen; apex rounded; costa scarcely arched; forewing three times as long as wide.

It is not impossible that fuller knowledge of the life histories of the western and eastern forms may prove them to be separate and distinct, in which case I would propose the name *pennsylvaniana* for the latter.

***Proteoteras arizonæ* sp. nov.**

Expanse 18-20 mm.

Head, palpi, antenna and thorax cinereous-white; outer surface of palpi speckled with black, thorax speckled with fuscous, and posteriorly edged with black; abdomen whitish, shaded with light fuscous above; legs whitish, banded and dusted with blackish-brown.

Forewing: yellowish-white or dirty white, more or less mottled with brownish-black. The dark color forms a fascia from middle of costa to anal angle, beginning at costa as an extra wide oblique costal line to upper third, below this it widens and is darker, and from its upper outer edge sends a spur into apex; the latter just before reaching apex sends a line down to below middle of termen. The oblique fascia is divided into three spots, as below the middle it is interrupted by a roundish spot of whitish scales. The basal area is not distinctly defined, but that part of the wing is more strigulated with black than the space between it and the fascia. The costa, before the fascia, is lightly marked with black, beyond the fascia with four brownish-black spots, the outer one close to the apex. The ocellic spot is large, of silvery-white scales on sides, with a spot of dull white scales, containing grayish and brown dots in the center, it occupies all of the space between and below the fascia and streaks from same. Cilia white, preceded by a geminate submarginal line on lower half, shaded with fuscous at lower third and below apex, becoming blackish-brown at apex.

♂.—Hindwing: black, cilia white, silvery-white below costa and yellowish hair pencil.

Underside both wings: yellowish-white, the costa of forewing and the outer half of both wings, except at termen, entirely overlaid with black scales. The upper side of hindwing and lower side of both wings of the females are grayish-fuscous.

Five males and two females: Prescott, Ariz., July 5th and 18th, Dr. Kunze; Oak Creek Canon, Ariz., 6000 ft. elevation, Aug., Prof. F. H. Snow; Pueblo, Colo., July, F. H. Nash; Cold Spring, Colo., Dr. Dietz; Fort Collins, Colo., June 24th, Gillette; Denver, Colo., Dyar and Caudell, No. 16,736.

Cotypes in U. S. Nat. Mus. and University of Kansas.

### ***Proteoteras crescentana* sp. nov.**

Expanse 16-18 mm.

Head, palpi, thorax and base of antenna very light brownish-white; outer side of palpi shaded with black and apical joint the same color, base of patagia shaded with brown; abdomen grayish-fuscous, lateral tuft white; legs whitish, dusted and banded with black.

Forewing: light gray, with a very strong, well defined black crescent from middle of costa to apex, it is broadest between costa and the lower side of the curve, which is below middle of wing, from there to apex it tapers gradually ending in apex as a narrow line. The black basal area is well defined above the middle of wing, its outer edge starting from inner fifth and running to inner third at middle; below this, it is indistinctly angled inward to dorsum. On the upper half of wing, between basal and crescent dark patches, is a fascia of whitish scales, which follows the underside of crescent above fold, nearly into ocellic spot; it is strigulated by a line of dark fuscous scales. Beneath fold from base to angle is a streak of brownish-ochreous, and the semi-circular patch of ground color on outer half of costa, enclosed by crescent, is of the same color. The ocellic spot is large, of gray and white scales, the inner and outer edges are leaden-metallic. Between the outer edge of ocellus and apex and before the inner side of

ocellus are small patches of brown, the latter being a continuation of the dorsal brown streak. Cilia gray, speckled with fuscous.

Hindwing: light brown, the hair pencil-fold edged with black; underside the same.

Underside forewing: grayish-fuscous, creamy-white below fold.

The hindwing and underside of both wings are the same in male and female specimens.

Seven specimens: Iowa, Gillette, Ac. Cat., Nos. 36 and 46; West Manitoba; Kansas; Cincinnati, Ohio, June 17th, Miss Braun; Plummer's Island, Md., June, A. Busck; Elk Grove, Ill., June 25th, K. L. McElhose.

Cotypes in U. S. Nat. Mus. and Miss Braun's collection.

**Prateoteras torontana** sp. nov.

Expanse 20 mm.

Head, palpi and thorax light brown; outer joint of palpi darker brown; antenna gray; legs whitish-cinereous, dusted with brown.

Forewing: yellowish-gray, dusted with brown. A brown crescent-shaped streak from middle of costa to apex, enclosing a costal patch of pure white, the costa in this patch dotted with three large and five small brown dots. The brown crescent streak is broadest on costa, narrower on lower curve, and at the apex it broadens, involving all the space above the indentation of termen. The inner half of costa, before the crescent, is bordered also with pure white, in which there are about six brown dots on extreme edge, and a line of three or four below on upper edges of cell. Cilia brown at apex, white below.

Hindwing: cinereous, speckled with brown, narrowly shaded with dark brown at outer edge and base of cilia, outer ends of cilia whitish, light whitish-brown, with a pure white spot in apex, cut by a narrow submarginal dark brown line.

Underside forewing: smoky brown, dark brown at apex and narrowly at termen, white costal patches and brown costal dots repeated.

One specimen: Toronto, Ont., June 5th; collected by Arthur Gibson; received from Dr. Fletcher.

**Proteoteras naracana** sp. nov.

Expanse 16-20 mm.

Head: brown, lighter in front; face white; palpi white, shaded with black on outside and upper edge; antenna light brown, basal joint brown, with a white spot on posterior side; thorax white, with a pair of joined olivaceous spots on front and a patch of same color on posterior end, patagia white, with yellow and brown scales at base and near outer end; abdomen fuscous, lateral tufts on anal segment white, anal tuft fuscous; legs yellowish-white, banded and dusted with blackish-brown.

Forewing: a white streak from base to outer fifth on upper part of wing; its lower edge runs from middle of base, slightly above fold and parallel to it, nearly to middle of wing, then goes obliquely upward to costa at outer fifth, it is indented by a semi-circular depression at the beginning of the upward angle beyond which its lower edge is overlaid with gray, and is bounded by a horizontal

elongated S-shaped black mark that lies between it and the ocellus. The extreme costa is olivaceous-green, with a large green spot at inner third and middle, with smaller ones before, between and beyond. The lower part of wing is mottled olivaceous-green and brown. There is a cluster of long whitish scales on dorsum at base, above which is a spot of whitish and fuscous-brown raised scales, before this tuft are three black dots in a triangle; before fold is another round button of raised scales and a third tuft above fold on outer fourth. The ocellic spot is grayish-white, with shining white side bars. From costa, beyond white patch, is a whitish spot, which sends a leaden-metallic streak under apex. Between this and apex is another white spot on costa on an ochreous-brown ground. Cilia speckled black and gray at base, fuscous outwardly.

Hindwing: smoky brown, male hair pencil black, cilia gray, with dark basal line, underside paler.

Underside forewing: same as upperside hindwing, with costal spots repeated.

Ten specimens: New Brighton, Pa., May 31st to June 19th, F. A. Merrick; Cincinnati, Ohio, May 26th to June 4th, Miss Braun; Wisconsin, Otto Buchholz.

***Epinotis septemberana* sp. nov.**

Expanse 16-19 mm.

Head: ferruginous on sides and front, grayish on top; palpi ferruginous, dark gray within; thorax ferruginous, gray, base of patagia dark ferruginous; antenna grayish beneath, ferruginous above; abdomen and legs yellowish-gray, latter banded and dusted with dark brown.

Forewing: gray on dorsal third, above purple-lake, the latter color paler at base and along edge of costa. The gray shade is finely atomized with blackish-fuscous and extends from base to termen a quarter above anal angle; from base to inner fifth there are only scattered gray scales on dorsal margin, at inner fifth it swells to middle of wing, at inner third it narrows obliquely along line of fold to outer fourth where it swells again, but less than before and rounds off into termen. The purple-lake ground color, in the indentation between the two gray elevations, is darker than elsewhere. There are a few scattered scales of gray in ground color above the second elevation. A fine, diminishing line of gray at termen from the anal angle to apex. Cilia purple-lake above middle, fuscous below and whitish opposite the gray color at angle.

Hindwing: smoky gray, cilia paler, with a darker basal line; underside the same.

Underside forewing: smoky brown, marked with cream color on costa and a reflection of purple-lake below.

Twenty specimens: nineteen taken in Essex County Park, N. J., the last week of September for a number of years; one from Scranton, Pa., September, A. E. Lister.

***Epinotia haimbachiana* sp. nov.**

Expanse 13-17 mm.

Head: brownish-gray, darker back of eyes; eyes purplish-brown; palpi gray, slightly darker outwardly, apical joint white; antenna gray; thorax gray, ante-



rior edge speckled with brown, and a double brown dot behind middle; abdomen, first three segments and tuft pale ochreous, other segments fuscous; legs whitish, banded with blackish-brown.

Forewing: ashy-gray, with lines, spots and shades of brown. The basal area extends to inner third at middle of wing and to inner fourth of costa and dorsum, outwardly it is blackish-brown, especially intense below middle and on dorsum for the outer half of the area; above and before the intense brown color the balance of the area is gray, strigulated with brown. Beyond is a broad grayish-white fascia, outwardly defined by a narrow, nearly obsolete brown shade from middle of costa to anal angle, outwardly oblique to upper third, then inwardly oblique to lower third, thence concave to dorsum, where its inner edge ends in a small brown dot. The whitish middle fascia is more or less dotted with brown, and a faint line of same color parallels its inner border. Beyond the narrow dark fascia a broader streak of shining gray scales starts below costa at outer fourth, goes to anal angle, circles the ocellus beneath to termen. The ocellus is in the middle of the wing of fine whitish lines on dark brown ground, with six or eight black dots and horizontal dashes; there are several fine short black lines in the shining gray streak below the ocellus and a third below costa. The costa is whitish-gray, finely and regularly marked with short brown lines, with four larger spots in outer half, the inner of which sends a brown streak obliquely to middle of wing, the next one sends a brown streak to termen beneath apex, with a spur between termen and ocellus. There is a brown-black semi-circle in apex, the outer half on the cilia, through the middle of it runs a dark brown terminal line, this line in the middle of wing is nearly obsolete, with a white line beyond it, it continues as a brown line around anal angle. Cilia fuscous, brown outwardly at apex, and white inwardly in middle.

Hindwing: light bronzy-brown, paler at base, underside gray.

Underside forewing: smoky brown, with geminated whitish costal spots. Some of the female specimens are dotted with light reddish ochreous, on upper part of middle light fascia, and the two lower ends of the costal streaks on outer half are the same color.

Twenty-five specimens: Philadelphia, June 3d to 23d, Frank Haimbach; Cincinnati, Ohio, Aug. 14th, Miss Braun; Wisconsin, Dr. Nason; Riverton, N. J., E. Daecke. One specimen from U. S. National Museum bearing labels "*Steganoptycha* near *Saliciana* Clem., and approximating *pauperana* (Europe) but apparently distinct from both C. V. R. 1886" (Wlsm.), and a smaller label referring to the slight cocoon and pupa case "found on ground Augt. 4 iss. Augt. 7, 1877."

Cotypes in U. S. Nat. Mus.

This species is close to my *E. ilicifoliانا*, bred from *ilex* in New Jersey and North Carolina. It is a generally larger and lighter species, and can be separated by the absence of the oblique brown line from end of cell to apex, which is always present in *ilicifoliانا*.

Mr. Haimbach, in whose honor the species is named, has collected scores of specimens in the daytime resting on the fence of a summer garden at the corner of Allegheny Avenue and Broad Street. The garden is filled with many varieties of shrubs and trees, and a careful examination early in May would certainly disclose the larvæ twisting the young leaves of a plant allied to *ilex*.

The generic notes regarding *ilicifoliana* will also apply to this species. They are both allied to *Clemens saliciana* and *salicicolana*.

***Epinotia plumbolineana* sp. nov.**

Expanse 13.5–16 mm.

Head, antennæ and palpi dark cream or very pale brown. Scales on head erect above and between eyes, flattened on face. Palpi second joint with flattened truncated tuft, scales rather closely appressed, end of third joint not hidden. Palpi rather depressed and not quite the length of head beyond it. Scales forming collar, tipped with reddish wine color. Thorax same as head, smooth. Abdomen alternately banded with cinereous and fuscous, the lighter color, the tips of scales of each segment, anal tuft cinereous. Legs same as head, but in front and tarsi stained with wine color.

Forewing: grayish-white, tinged with cinereous ground color. A conspicuous wide-red fascia from middle of costa to anal angle, broadest on costa and as wide there as one-third to one-half of width of wing, gradually tapering to an obtuse point at anal angle. The inner edge of this fascia curves evenly and obliquely outward, the outer edge is sinuate, slightly concave above and convex below the middle, the outer edge is outlined by a slender line of white lustrous scales from costa nearly to anal angle, turning inward above and defining the obtuse lower point of this fascia. Beyond this fascia the entire outer margin is clouded with this same color, but a shade paler, roughly in the form of a triangle with the base resting against the cilia, the other two sides coming to a point just beyond end of cell. Above this triangle the costa from fascia to apex is ground color. On the extreme apex are a few blackish scales, and in some of the darker specimens a few of these scales are scattered over fascia and triangle. There are no distinctly defined subapical costal spots, but four or five short streaks of more lustrous white can be observed in some specimens. A basal area is only well defined in some of the darker specimens, in these it covers the inner third of wing, angulated on cell and of a light shade of brown. In the majority of specimens this light brown basal color shades into the ground color, without very distinct line of demarcation. A few dark dots mark this area in some specimens, usually paralleling the fascia. The central fascia is narrowly edged with a whiter shade than the ground color. The male costa is slightly curled up from base to outer edge of fascia, and in the hollow thus formed is a narrow line of dark leaden scales, doubtless a secondary sexual character, this line begins just beyond base and ends in middle of fascia. Cilia lustrous pink.

Hindwing: dark gray, cilia paler, preceded by a darker, then a paler line.

Underside forewing: dark smoky fuscous, with cinereous line along costa from outer three-fifths to just before apex. Cilia stained with dull pink, preceded by a darker then a paler line.

Underside hindwing: same as above.

Twenty five specimens: one, No. 33, Seattle, Wash., O. B. Johnson; two, Seattle, Wash., v 27, 1902, T. Kincaid, blue label 179, and white labels "willow," whether caught on willow or bred from larvæ on willow not stated; twenty-two, Wellington, Br. Col., June, Rev. Geo. W. Taylor, and Th. Bryant.

Cotypes in U. S. Nat. Mus.

***Cydia cupressana* sp. nov.**

Expanse 14-16 mm.

Head: dark greenish-brown, scales tipped with cinereous on the face the latter predominates, making face lighter, scales of head form semi-circular tuft above eyes, meeting above as a slight crest. Palpi very short, tip of outer joint scarcely projected beyond face, scales of second joint rather closely compressed, tuft small, colored same as face, outer joint black, bare, short, blunt. Thorax smooth, shining fuscous, patagia same, but scales shading into whitish at outer ends, neither irrorated with lighter specks like head. Abdomen and legs above shining fuscous, paler below, anal tuft tinged with ochreous.

Forewing: dark chocolate-brown, very finely irrorated with transverse lines, pale yellowish-green scales beyond basal area and crossed by five rather broad metallic lines, of a silvery-salmon hue; only the first pair of lines in middle of wing are continuous from costa to dorsal margin, the third ends just before reaching dorsal margin, the fifth is but little more than a costal streak ending at vein 8, the outer line before the outer margin is divided in three parts by two evenly spaced interruptions. A small metallic dot below costa between fifth line and apex. On the extreme costa the metallic scales are replaced by yellowish-green. The metallic lines are partly bound by black, notably: before the first, beyond the upper third of the streak, which black streak follows along costa to third line and down its inner side to top of cell; the lower half of this third line is defined on its inner edge by black, the black line at its upper end turns outwards, at right angle, cutting through the metallic line, and continues to the inner edge of the fifth metallic line, which it defines for the length of its middle section; in some specimens the horizontal black line is not continuous, and the line before the fifth metallic is also broken into two to four short horizontal dashes. Black also outwardly defines the fourth short line. The basal area is ground color, slightly shining, lightly and sparsely dusted with yellow-green atoms, it occupies nearly a third of the wing on dorsal margin, a quarter on costa, its outer margin oblique for two-thirds of its length, then vertical to dorsum. The metallic lines are nearly parallel to each other, the space between first and second is widest, the ground color between these two lines is also more heavily overlaid, with the pale atoms, the same is the case between third and fourth, and between fifth and apex; making an effect of three paler fasciæ, separated by two narrower darker fasciæ. Cilia luteous-metallic, preceded by a narrow brown-black line, the latter interrupted a third below apex by a small square yellowish-green spot.

Hindwing: deep smoky brown, cilia white, preceded by a brown line, and this by a faint narrow pale line; long hairs near base on veins 1 and lower median vein white.

Underside both wings: dull brown; underside forewing: costa marked with

pale yellow beneath the metallic lines above, the small pale spot on outer margin is also repeated, cilia shining brown. The cilia of hindwing is same as above, the tips of scales below outer half of costa and in apex are pale yellowish-green, giving the outer half of wing an irrorated appearance.

Described from ten specimens in the U. S. National Museum, bred from seed-pods of *Cupressus macrocarpa*, Alameda Co., Cal., issued Jan. 1 to 24, 1886, breeding number 68.

Cotypes in U. S. Nat. Mus.

***Cydia piperana* sp. nov.**

Expanse, ♂ and ♀, 18.5 mm.

Head, palpi and thorax cinereous-gray, with atoms of paler gray. Abdomen and legs shining fuscous. Palpi porrect, ascending, second joint long, loosely clothed, third joint bare, extends beyond face.

Forewing: dull brown; closely, evenly and heavily overlaid with pale yellow atoms, these atoms not arranged in parallel transverse lines as in *cupressana*. Several metallic, silvery lines, with bluish reflections, cross the wing. One, just before the middle from costa to dorsum, nearly vertical, but slightly bulging outward about middle; the second, beyond middle, runs obliquely to dorsum before anal angle, and there joins a preciliate metallic line, the latter arising on costa at apex. Between second and outer lines are two short ones on costa, the outer is double the length of the inner, and is oblique. The metallic lines are narrowly edged with black. Cilia shining luteous, preceded by a narrow black line.

Hindwing: smoky fuscous, darker towards apex, cilia white, preceded by dark fuscous line, and it preceded by a very narrow whitish line.

Undersides both wings: shining fuscous, with a coppery reflection. Cilia same as above.

Two specimens: Pullman, Wash., April 11, 1898; collected by Mr. C. V. Piper, in whose honor the species is named.

Cotype in U. S. Nat. Mus.

***Cydia inquilina* sp. nov.**

Expanse, ♀, 14-15 mm.

Head: shortly and loosely scaled in front and above, face small, cinereous, thickly dotted with fuscous or smoky brown. Palpi short, scarcely extend beyond head, second joint above with compressed scales, below loosely clothed with short scales hanging vertically downward, from end of second joint to base; outer joint as long as second, depressed, not hidden by tufts of second, closely clothed with short, compressed scales; pale cinereous, excepting all of third joint and a patch on outer sides of outer half of second, which are smoky black. Antennæ (female) simple, cinereous, lightly annulated with dashes between segments. Thorax smooth, it and patagia cinereous, thickly dotted with smoky brown. Abdomen dark fuscous, posterior edges each segment cinereous. Legs cinereous, annulated with smoky brown.

Forewing: smoky brown, tinged with ferruginous, minutely and thickly dotted with cinereous. A large patch of coppery-metallic scales in middle of wing below

costa, and a smaller vertical patch of same color before ocellic spot. A sinuate line of same color scales outlines outer side of ocellic spot, this line is interrupted in middle, and beyond the break on outer margin is a dot of same color. Several horizontal black streaks in ocellic spot. Costa from inner third to apex black, which is broken by six geminated cinereous dashes, about evenly spaced. Excepting the two apical pairs, these geminate dashes are heavily overlaid with bluish-metallic scales, most conspicuous in four short oblique lines at and beyond middle of wing, and an extended line from third spot before apex, which continues below the outer spots to outer margin about a quarter below apex. A narrow shade of ochreous-red or wine color from before middle covers upper part of wing below costa, turning downward at apex and ending on outer margin at anal angle. This reddish shade sharply contrasts with a black preciliate line on outer margin, and with the black and metallic streaks along the costa. In the apical third are a few short horizontal streaks of black. Cilia fuscous, with a shining purplish reflection.

Hindwing: smoky fuscous, paler basally, cilia pale fuscous, preceded by a broader, darker and a narrower paler line. Underside same.

Underside forewing: very dark, smoky, black; cilia same, preceded by slightly paler line; costal cinereous dashes faintly separated.

Three female specimens: two labelled "San Francisco, California, Mrs. Knickerbocker," and one red ink number 69, Seattle, Washington, O. B. Johnson.

Cotypes in U. S. Nat. Mus. and in my collection.

***Ancylis intermediana* sp. nov.**

Expanse 12.5–14 mm.

Head, palpi, thorax and antennæ pale cinereous; palpi projecting two-thirds length of head before it, usually depressed, second joint heavily scaled, not compressed, entirely concealing third joint, sharply truncated at outer end. Scales of head long, forming small brush in front and ridge between eyes. Abdomen shining gray, anal tuft cinerous; legs cinereous, a shade paler between joints.

Forewing: pale gray, overlaid with shining whitish scales = ground color. Large dorsal and other prominent spots olivaceous-brown = dark color. Large dorsal spots from base to anal angle on dorsum, upper edge from middle of base, swelling gently upward, reaching highest elevation at about inner third, where it is as wide as three-fifths the width of the wing, evenly rounded on top, thence descending, evenly without prominences towards anal angle, slightly sub-sinuate before angle; a continuous line of dark color is continued from anal angle as a preciliate line and merges into the dark color at apex. At the middle of costa an oblique fascia begins, but extends only two-thirds towards anal angle, and widens out into a well-defined lunate spot, the inner, lower and outer margins forming the curved portion; a falcate dark color spot in apex, preceded by eight short oblique dashes of same color on costa between apex and central fascia. These dark costal spots are separated by oblique lines of white lustrous scales, the lower points of each of the outer four are overlaid with lustrous blue, a few scales of same color beneath apex; the inner bounds the upper edges of lunate spot and runs into a line of bluish lustrous scales dividing this spot from the ocellic space; the next outer white line merges with the inner, the third and fifth are very

short and less than half the length of the fourth, sixth, seventh and eighth white lines. The first to sixth are outwardly oblique, the seventh vertical and eighth inwardly oblique. The dark costal dashes on each side of the sixth white line join together below and form a distinctly defined sinuate line, the outer edge of which rests on middle of outer margin. The inner boundary of this line is defined by a line of bluish lustrous scales, which also separates it from outer edge of ocellic patch. The pale ground color covers upper two-fifths of wing on costa before central fascia, thence descends in an easy sweep, with almost parallel edges between dorsal and lunate spots to the dorsum, then into and forming the ocellic space; a faint shade of darker scales crosses it on upper edge of cell, and in the ocellic space it is slightly overlaid with darker scales. The lunate spot at its outer end is cut by a short horizontal line of black scales, with a dot of same above the line. Cilia shining white, cut by a long black dash beneath apex and a shorter one below this, and margined inwardly by a row of black dots between apex and middle; below apex outer ends of cilia shaded with olivaceous-cinereous.

Hindwing: olivaceous-gray, cilia paler, preceded by a darker and a lighter line, the latter the narrowest.

Underside both wings: shining fuscous, hind wing paler than forewing; cinereous along costa of forewing, with darker spots repeated. Several dark dots on outer half of costa of hind wing. Cilia cinereous.

Nineteen specimens; male and female, one Seattle, Wash., O. B. Johnson, No. 51; eighteen, Wellington, Br., Col., Rev. Geo. W. Taylor and Th. Bryant, May and June.

Cotypes in U. S. Nat. Mus.

***Enarmonia walsinghami* sp. nov.**

Expanse 15-20 mm.

Head: smoky brown; palpi light brown, darker on ends of scales and apical joint; antennæ fuscous; thorax bronzy-black; abdomen dark fuscous, anal tuft brownish-ochreous; legs light brownish-ochreous, annulated and dusted with blackish-brown.

Forewing: brownish-black, on the inner half of costa are seven or eight ochreous dots on the extreme edge, four larger and more prominent dots are on the outer half, but do not extend below the edge. The white dorsal patch is large and roughly triangular in shape, it extends to middle of wing on the dorsum, within the spot are two small black dots; there is a gray shade extending from upper end of the white patch to the costa before middle; a similar gray shade extends from the three inner costal marks; beyond the middle, to middle of cell and from the fourth, a pair of lines of the same color to the middle of the termen; between these gray shades and between the outer one and termen the ground color is overlaid with scattered black and ochreous-brown scales. The ocellus consists of a large U-shaped mark of gray-metallic scales, the lower rounded part resting on the termen above the angle, and the upper open and extending to beyond middle of wing. Cilia smoky brown, preceded by irregular darker line.

Hindwing: dark smoky brown; underside the same, but less dark cilia shining fuscous.

Underside forewing: same as hindwing, with ochreous costal marks and the white dorsal patch repeated.

Seven specimens: Hemlock Falls, N. J., April 29th; Essex Co., N. J., April 30th and May 4th; Great Notch, N. J., May 4th; Tryon, N. C., W. F. Fiske.

Cotype in U. S. Nat. Mus.

This is the eastern representative of the Californian *americana* Wlsm. Since the note published in Proc. U. S. Nat. Mus., xxviii, 362, 1905, I have received additional material which makes it very evident that the species are distinct. I take pleasure in dedicating the new form to Lord Walsingham, whose careful work on North American Tortricids is so well known and appreciated.

***Enarmonia dyarana* sp. nov.**

Expanse, ♀, 16-17 mm.

Head: dark gray-brown, lighter in front; palpi light clay color, the long hair on the outer side of tufts fuscous; apical joint fuscous; antennæ blackish-fuscous; thorax blackish-fuscous, patagia of an olivaceous-fuscous shade; abdomen blackish-fuscous, anal tuft and underside anal segments whitish.

Forewing: blackish-brown, the outer fourth faintly irrorated with yellowish scales. On the costa before the middle is a pair of white dashes joining at top of cell and continuing to middle of cell as a dull leaden metallic line. Beyond the middle are four pairs of similar dashes, from all descend lines of metallic scales, that from the inner pair nearly joining the upper end of the dorsal mark. There is a small metallic spot on termen below apex; and beyond it, interrupting the black terminal line, is a patch of cream-colored scales. The ocellic spot is absent, but represented by a vertical bar of metallic scales starting from dorsum at anal angle and slightly curving inward to above middle of wing. The white dorsal mark arises from beyond middle of wing and inclines outward, it is composed of two white lines which come close together at middle of their length, and are separated at each end, they extend to above middle of wing, the scales at upper end metallic. Cilia shining fuscous.

Hindwing: smoky fuscous, cilia paler; underside the same.

Underside forewing: shining grayish-fuscous, with costal dashes as well as ocellic bar strongly reproduced in cream color, a dash of same through middle of cell.

Three ♀ specimens: Colorado, collected by Dyar and Caudell.

Cotypes in U. S. Nat. Mus. and my collection.

This species is roughly scaled and will go in the same class as *E. americana*.

***Enarmonia edwardsiana* sp. nov.**

Expanse 12-14 mm.

Head and thorax blackish-brown; palpi pale clay-brown; antenna black; abdomen blackish-fuscous, external tips of scales on underside paler, anal tuft ochreous; legs whitish-gray, powdered with blackish-brown.

Forewing: brown, with a slight bronzy tinge; in the fresh specimen rather heavily streaked with gray from base to termen. On the costa below middle are two oblique white streaks, between them and base another white shade that does not extend below costa; beyond the middle are four pairs of white costal dashes, the inner one of the first pair giving off a short line of lilaceous metallic scales; the outer one of the second pair gives off a similar line, which runs beneath the third pair; the outer dash of the fourth pair continues as a broken line of metallic to termen beneath apex; these white dashes are separated by black interspaces. The ocellic spot is absent, being represented by a vertical bar of yellowish-gray metallic scales. The white dorsal streak is slightly beyond middle of wing and consists of two narrow oblique lines joined together at the top by metallic scales, and this extension reaching above middle of wing. Between the two lines on dorsum is a tiny white dot, a similar dot on dorsum before the first line; one or both of these dots are absent in some specimens. Cilia shining leaden, preceded by a black terminal line.

Hindwings: dark bronzy-brown, tuft of hair scales at base of median vein and cilia white. Underside whitish-bronze, mottled along costa with darker brown.

Underside forewing: same as hind wing, but outer half shinish reddish-bronze; costal spots strong, repeated.

Four specimens: three Henry Edwards' collection, Am. Mus. Nat. Hist., Reg. Nos. 14,564, 14,568, and 14,569; Coll. Nos. 236 and 235, California; one specimen, San Francisco, Cal.

Cotypes in U. S. Nat. Mus. and in my collection.

This species is similar to our eastern *E. tristrigana* Clem., but can be distinguished by the different dorsal marks. The three specimens from the Edwards' collection are somewhat faded, and are of a light cinnamon brown, the gray streaks absent, but the costal, ocellic, and dorsal marks agree with the fresher specimen.

### ***Enarmonia lana* sp. nov.**

Expanse 13.5-15 mm.

Head: fuscous, dark cream in front; palpi whitish, with a few dots on brown on outside of tufts; antennæ fuscous; thorax olivaceous-brown; abdomen purplish-fuscous, shining, outer ends of scales on underside whitish-fuscous; legs bronzy-brown.

Forewing: brownish-bronze, shining all over. There are two short oblique white dashes on costa before middle; beyond middle are eight white dashes, the inner pair geminate, and the six outer ones arranged in three pair, interspaces dark brown; from the inner dash and from the first pair, short lines of bluish-metallic scales parallel the costa; a short line of the same is below the eighth. There is a dot of the same in termen beneath apex. The ocellic spot is absent, but represented by a vertical bar of golden metallic scales reaching to middle of wing, between it and termen the ground color is overlaid with yellowish scales. The dorsal mark is broad and divided into four lines, they are somewhat contracted at the top, where they reach to the middle of the wing. Terminal line dark brown, cut below apex by a black streak, bordering which below is a white scale.



Hindwing: dark bronzy-brown, with a dash of whitish at base, cilia pale fuscous. Underside of both wings dark bronzy-brown, with costal dashes faintly repeated.

Two specimens: one ♂ and one ♀, Colfax, Placer Co., Cal., July, Collected by A. H. Vachell.

This species is also similar to the eastern *tristrigana*, but can be separated by the difference in costal and dorsal marks.

***Enarmonia placerana* sp. nov.**

Expanse, ♂, 12-14 mm.; ♀, 14-16 mm.

Head: fuscous-brown, paler in front; palpi pale clay-brown, tips of brush and apical joint blackish-brown; antennæ black, with a bronzy tinge; thorax olivaceous-brown, patagia tipped with white; abdomen fuscous-brown, external scales, underside, white; thorax whitish-ochreous; legs cinereous-gray, powdered with fuscous.

Forewing: bronzy-brown, shaded with leaden gray on inner third on dorsal and costal margins of male. Before the middle of costa there are two white marks on extreme edge next to base, between these and middle are two white oblique dashes, the lower ends continuing as pale blue-metallic, and almost running into top of dorsal mark. Beyond middle are eight narrow oblique white dashes, the first sends a metallic-blue line obliquely across wing and joins the upper end of the vertical ocellic bar; from the fourth a metallic blue line runs parallel to costa and combines with a similar extension from the eight. The ocellus is represented by a vertical bar of silvery-gray metallic scales, the lower end resting on termen above anal angle, it curves slightly inward. The white dorsal patch is broad and divided into two lines by a line of brown, in some specimens each side line is subdivided by a central dotting of brown scales; it curves slightly outward, and in the ♀ specimens there is a tendency to broaden out at upper end, which reaches to middle of wing and terminates in a few metallic blue scales. Terminal line black, cut below apex by a dash of whitish-fuscous. Cilia leaden-fuscous.

Hindwing: dark bronzy-brown, cilia fuscous, underside both wings the same, with costal dashes repeated.

Three ♂ and four ♀ specimens: Placer Co., Cal., May to June; six collected by A. H. Vachell; one, collection of U. S. Nat. Mus.

This species is marked like *tristrigana*, but the shape of the wings and rather rough scales place it in the same class as *americana* Wlsm.

***Enarmonia wana* sp. nov.**

Expanse 10-12 mm.

Head: gray, speckled with darker gray; palpi pale cinereous, upper end of tuft a shade darker, outer joint blackish; antenna gray, with darker annulations at joints, thorax bronzy-brown, with a reddish-green tinge; abdomen shining blackish-fuscous above, paler beneath, anal tuft whitish; legs whitish-gray, shining iridescent scales.

Forewing: shining bronzy-brown. Before the middle are three white costal dashes, the inner one nearly obsolete, each continuing to top of cell in lines of leaden-metallic. Beyond the middle are three pairs of white costal dashes, the two inner pairs close together, the outer close to the apex, all are continuous as

golden-metallic lines to a third below costa. The ocellic spot is olivaceous-yellow, crossed by four horizontal black lines; the vertical side-bars are golden-metallic, the inner one connecting with first costal line beyond middle. The dorsal white patch, which is divided by a brown dot on dorsum, about three times as long as wide, curving outward slightly and reaching but a trifle above fold; from the outer upper edge it is continued as a metallic line to above middle of wing approaching but not joining the metallic line from costal spot before middle. The tips of the scales on upper half to middle, in apex and before termen are tipped with yellow. There is a dark brown terminal line cut by a white dash below apex. Cilia shining fuscous.

Hindwing: bronzy-brown, paler towards base, cilia same inwardly, white outwardly; underside shining gray-white.

Underside forewing: shining bronzy-brown, with costal spots repeated. In certain lights there is a greenish bloom over both surfaces of both wings.

About fifty specimens: Carmel-by-the-Sea, Monterey Co., Cal., April; San Luis Obispo, Cal., March; all collected by A. H. Vachell.

***Enarmonia zana* sp. nov.**

Expanse 10-15 mm.

Head and thorax grayish-brown; palpi pale clay color, ends of tuft and third joint blackish; antennæ fuscous-brown; abdomen blackish-fuscous, paler between joints, anal tuft ochreous; legs pale brown, heavily overlaid with black.

Forewing: bronzy-brown, with a metallic bloom in certain lights; the costa is marked with three obscure whitish spots before middle, from the outer two of which an obscure milky white shining fascia follows to middle then angles inward to dorsal margin. Beyond middle is a group of four white costal dots, obscurely geminate, the inner sends a line of shining silvery scales obliquely to middle thence down to dorsum, where it forms the inner bar of the ocellic spot; a short shining line from fourth spot joins the preceding at middle of wing. Before the apex are two hook-shaped white dashes, the outer one sending a broken line of shining scales to middle of termen; before these two dashes is an obscure white spot on costa, which sends a broken line of metallic scales to anal angle, the lower part forming the outer vertical bar of ocellus. The ocellus consists of a shining yellowish patch, divided by four short horizontal lines, these lines do not reach the side-bars, the outer bar is defined on its inner side by a broken row of black dots, with a few black dots on its outer side. The ground color of the outer half of the wing is heavily overlaid with golden-yellow scales. Cilia shining fuscous, preceded by a dark fuscous line.

Hindwing: rather light bronze, cilia pale gray, shining; underside brownish-gray, rather heavily reticulated with pale gray scales, especially at outer end of wing.

Underside forewing: upper half bronzy-brown, shading into a brownish gray below; costal spots repeated.

Twenty-four specimens: Wellington, Br. Col., May and June, Geo. W. Taylor and T. Bryant.

This species is similar to *E. vana*, but can be separated by the arrangement of costal spots and the ocellic spots.

***Enarmonia vana* sp. nov.**

Expanse 13-15 mm.

Head and thorax dark gray, with a bronzy tinge, face pale yellowish gray; palpi yellowish-gray, with tips of scales and apical joint blackish; antennæ fuscous, finely annulated with yellowish-gray; abdomen blackish-fuscous above, cinereous beneath; legs whitish-cinereous, thickly powdered with dark brown.

Forewing: shining bronzy-brown; the strongest marked character is the ocellic spot, consisting of a patch of cream-colored scales, with a pinkish tinge and divided by four horizontal black lines; before and beyond this patch is a vertical bar of golden-metallic scales, also with a pinkish hue. The costa is marked by about six geminate cream-colored dashes; from the two pairs before the middle descend obliquely to top of cell obscure pinkish-metallic lines, which merge there, and an irregular and more or less obscure fascia of the same color reaches the dorsum at middle of wing. Beyond the middle the first and third pair of spots give off lines of pink-metallic, which approach each other about the middle of wing and nearly merge into the inner bar of the ocellic spot. A similar line curves outward from the second spot before apex, but ends before the termen; the dot before the apex gives forth a similar line, which runs into termen under the apex and causes a break in the black terminal line. The scales of the ground color of the outer half of wing are very faintly tipped with yellowish, giving a strigulated appearance. Cilia shining leaden.

Hindwing: light bronzy-brown, cilia same, with a leaden hue; underside same.

Underside forewing: darker than hindwing, costal spots strong, repeated.

Eight specimens: Colfax, Placer Co., Cal., July; collected by A. H. Vachell.

***Enarmonia tana* sp. nov.**

Expanse, ♂, 12-13 mm.; ♀, 15-16 mm.

Head: olivaceous-gray, collar and face cinereous-gray; palpi cinereous, third joint blackish; antennæ fuscous; thorax olivaceous-gray, patagia streaked with whitish-gray; abdomen blackish-fuscous, with a few long white hairs from posterior segments; legs cinereous, dotted and annulated with dark brown.

Forewing: basal area dark leaden-gray, outwardly irrorated with yellow, followed by a broad cream-yellow central fascia, beyond which the leaden-gray ground color is heavily irrorated with vertical lines of creamy-yellow scales, except in the ocellic area, where the yellow lines are horizontal and separate the four horizontal black lines. From the outer third of costa is a wedge-shaped, cream-colored patch extending to middle of cell, and between its lower end and the central fascia is a smaller rectangular spot of the same color. This costal patch is marked on either side by a more intense yellow spot on costa, and is interrupted by one strong and one weak black costal dot; there is a similar black costal dot in central fascia. There are three transverse lines of shining leaden-metallic scales in the middle of the wing, two in the central fascia, the inner a little beyond the inner edge and extending only to middle of wing, the outer outlining this fascia, the third an equal distance beyond the second, its lower half forms the vertical inner bar of the ocellic space. There is a fourth line of the same scales from a broad white costal patch before apex to anal angle, interrupted twice, its lower half forms the outer vertical bar of the ocellic spot. There is a fine black terminal line, and the cilia is shining cinereous.

Hindwing: bronzy-brown, cilia white; underside brownish-fuscous, cilia gray.

Underside forewing: steely-brown, costal spot repeated, cilia shining leaden, preceded by a darker and lighter line.

Twenty specimens: Verdi, Nev., June 20th to 30th; Cisco and Colfax, Placer Co., Cal., June and July; all collected by A. H. Vachell.

***Enarmonia vancouverana* sp. nov.**

Expanse 11-13 mm.

Head and thorax dark brown, nearly black; palpi cinereous; antennæ black; abdomen dark purplish-fuscous, tuft ochreous; legs dark gray, tarsi annulated with cinereous.

Forewing: bronzy-black, a grayish shade at base and less black and more reddish-brown at outer end. The costa is marked with four pairs of white, oblique dashes, from each pair a line of metallic-blue scales, none of them go below one-third the width of wing; opposite the end of the apical line is a tiny blue dot on termen below apex. The ocellic spot is absent, being represented only by the inner vertical bar of lilaceous scales. The white basal dash is narrow, slightly curved outwardly, does not reach to middle of wing. In some specimens it is divided by a line of ground color; in one, the two halves are joined together in the middle, leaving forked ends below and above. Terminal line black. Cilia shining fuscous.

Hindwing: bronzy-brown, underside grayish-brown, cilia fuscous.

Underside forewing: bronzy-brown, with costal spots repeated.

Ten specimens: Wellington, Br. Col., June, T. Bryant.

This very black species can hardly be mistaken for any other. I notice a small amount of variety in the costal marks of several of the specimens, there being an extra white dash between the third and fourth pairs.

***Enarmonia saundersana* sp. nov.**

Expanse 10-12.5 mm.

Head and palpi: cinereous-gray; thorax and abdomen fuscous, latter cinereous beneath; legs cinereous, dusted with brown.

Forewing: bronzy-brown, shading to gray basally. Costa with ten rather long, oblique, wedge-shaped, whitish dashes, with blue continuations from first, second, fourth, seventh and tenth. The ocellic spot is nearly obsolete, being represented only by the vertical inner bar of lilaceous-metallic scales, narrowed, edged with black on the inner side and a few irregularly placed black dots between outer edge and termen. The dorsal mark is nearly obsolete, it consists of four faint whitish lines, with their upper ends converging and ending a little above middle of wing, the upper ends are overlaid with bluish-metallic scales. Termen line black, and a black dot in apex. Cilia shining fuscous.

Hindwing: bronzy-brown, cilia same as forewing.

Underside both wings: bronzy-gray, with costal spots repeated.

Four specimens: Toronto, Can., May 24th to June 11th; "On Lupin," H. S. Saunders.

**Enarmonia fana** sp. nov.

Expanse 7.5–10 mm.

Head and thorax in some lights like the grayish-blue bloom of a ripe plum, in other lights with a purplish-metallic reflection; palpi yellowish-white, outer joint darker; abdomen above same as thorax, beneath cinereous; legs cinereous, dusted with brown.

Forewing: bronzy-brown, but shaded with the plum-bloom in the inner fourth. On the costa are eight broad, oblique white lines divided by dark brown and extending to top of cell; from the first, third, sixth and eighth the lines are continued as pale metallic-blue. That from the third spot runs obliquely to and joins the inner metallic bar of the ocellic spot; that from the sixth spot goes towards but does not join the outer bar; the blue beneath the eighth is but a few scales. The ocellic area is large, filling the outer fourth of wing from anal angle to above middle; it consists of six black lines (the upper line is a row of dots, and the lower is short, with a spur angling downward), the vertical side-bars are shining lilaceous-metallic, the inner is double the width of the outer. In the middle of dorsal margin is a large white spot, in some specimens not divided, but in others divided by a line of brown, it is slightly inclined outward and reaches but a trifle above the fold, on its upper end the white is replaced by lilac-metallic scales which obscurely extend to middle of wing. The extreme edge of termen is brown, cilia shining leaden, with a white cut just below apex.

Hindwings and underside of both: bronzy-brown, shading to grayish-brown at base.

Ten specimens: Anglesea, N. J., May 15th to 30th; Essex County Park, N. J., May 15; Cincinnati, Ohio, Aug. 3d, Miss Braun.

Close to *interstinctana* Clem., *bracteata* Fern. and *maculana* Fern.

**Enarmonia angleseana** sp. nov.

Expanse 10–11 mm.

Head above and thorax bronzy-gray, with a bluish reflection, face whitish-gray; palpi cream color, apical joint a shade darker; abdomen blackish-fuscous, with a purplish reflection above, a band of cream color on each segment below; legs whitish-cinereous, shaded with light brown.

Forewing: bronzy-brown, with a leaden shade at base. The outer three-fourths of costa is marked with nine rather broader lines; all, excepting the third, which is yellow, pure white; these white lines are unusually long, reaching to top of cell; from the first and second, which join together and separately from the fourth, seventh and ninth, are short lines of pale metallic-blue scales. The ninth outlines a large blackish-brown apical spot. In the ocellic space are five horizontal black lines, separated by four yellow lines, the latter are joined together inwardly, forming a vertical yellow bar; on either side the ocellus is enclosed by a bar of lilaceous-metallic scales, the inner bar being the broader and longer. Between this inner bar and middle of wing is a large shining yellow dorsal spot, composed of five or six vertical lines, reaching almost to middle of wing, the two outside lines are somewhat inclined towards each other at the top. Cilia shining, leaden-brown.

Hindwing: dark bronzy-brown, cilia grayish-brown; underside bronzy-brown, costal spots strongly repeated; over both wings is an iridescent sheen or bloom, when held at certain angles.

Forty-five specimens: Anglesea, N. J., from middle of May to end of June; one specimen, labelled "Mass.," from C. V. Riley collection, National Museum.

Cotypes in U. S. Nat. Mus.

Nearest to *interstinctana* Clem., but readily separated by the white dorsal mark of the latter. This species occurs in countless numbers in the shrubbery along Five-Mile Beach. At every step dozens rise and settle on the leaves of any convenient plant, where, for a moment or two, they strut around, very similar to the habits of the *Choreutis*.

***Enarmonia dana* sp. nov.**

Expanse 12-13 mm.

Head: hoary-brown; palpi same, but cinereous at base; antenna gray, finely annulated with black; thorax hoary-brown, with an olivaceous tinge; abdomen fuscous, tuft cinereous; legs whitish-gray, dusted with brown.

Forewing: olivaceous-brown, eight or nine obscure whitish dots on costa, those beyond middle geminate; from each costal spot descends a line of pale blue, before the middle these are short, the two in the middle join a quarter below costa and send an oblique line to dorsum before the obsolete ocellic spot. The two spots beyond this blend and send a single line to termen below apex. The apical part of wing is minutely dotted with yellow scales. There are four black dots on termen below middle, and the lines of blue scales are bordered inwardly with black dots. Cilia shining, leaden-brown.

Hindwing: smoky brown, cilia shining, leaden-brown.

Underside forewing and hindwing: shiny smoky brown, with costal spots faintly repeated.

Eight specimens: Montclair, N. J., May 24; Caldwell, N. J., May 17th and 22d; Wyoming Co., Pa., 2300 ft., June 17th.

***Enarmonia dandana* sp. nov.**

Expanse 12 mm.

Head and palpi cinereous; antenna shining fuscous; thorax brownish-fuscous; abdomen dark fuscous, with a purplish reflection, anal tuft gray; legs whitish-gray, dusted with fuscous.

Forewing: smoky brown, in certain lights with a metallic sheen over the whole surface. Before the middle the costa is marked with closely set dots of obscure white, each terminating below in a few pale blue scales. Beyond the middle are five conspicuous geminate white spots. The inner one sends a line of blue obliquely to upper angle of cell; from the middle one a similar blue line goes to termen below apex. Above the anal angle and well before the termen are four horizontal black lines, enclosed before and behind by vertical bars of shining lilaceous scales. This ocellic spot is higher up and farther in than its usual position. A line of black scales lie between the two blue lines from costa. The

brown ground color is sparsely dotted with yellow scales on the inner two-thirds of wing and closely on the outer third. Cilia shining, leaden.

Hindwing: smoky brown, a shade paler at base, cilia gray, but tinged with brown at apex; underside smoky brown.

Hindwing: slightly lighter than forewing, the costal dots of the latter are faintly repeated.

Four specimens: Essex County Park, N. J., on hills back of Montclair, in light trap, Aug. 28th.

This species is much like *E. dana*, but can be readily separated by the strongly developed ocellic spot, which is entirely wanting in *dana*. I have male and female of both species.

***Enarmonia garacana* sp. nov.**

Expanse 14-16 mm.

Head and palpi olivaceous-gray, outside of palpi blackish; antenna dark fuscous; thorax speckled fuscous-gray, posterior end fuscous, preceded by a whitish streak; abdomen fuscous; legs whitish, dusted and banded with brown.

Forewing: olivaceous-fuscous, with three broad geminate whitish fasciæ from costa to middle of wing. On costa beyond middle are four shorter whitish geminate spots and a white dash before apex. Between dorsum and fold are two whitish patches, each divided by a darker line, one at inner fourth and one in middle. From the outer third of costa a bluish-metallic line crosses wing to anal angle, where it ends in a white dash in cilia, a similar metallic line from costal spot before apex ends as a white dash in cilia at middle of dorsum. Ocellic spot obsolete, consisting of a few scattered metallic scales. Termen edged with a fine black line. Cilia leaden-gray.

Hindwing: bronzy-brown, cilia whitish, with a darker basal line; underside grayish.

Underside forewing: smoky brown.

Four specimens: Chicago, Ill., July, J. H. Reading; Trenton, Ontario, J. D. Evans.

***Sparganothis taracana* sp. nov.**

Expanse 13.5-20 mm.

Head and palpi reddish-ochreous, latter paler within; thorax dark ochreous, patagia purplish-ochreous; antenna pale ochreous, shaded with purplish towards base; abdomen ochreous; legs whitish, with an ochreous reflection, dusted with pink and purplish-ochreous.

Forewing: pale ochreous, or light canary-yellow, under a lens the extreme tips of each scale has a bluish-iridescent reflection. The extreme base is pinkish-purple, this dark shade extends along costal and dorsal margins to inner sixth. There is a narrow fascia of the same color across middle of wing, interrupted in the middle of the cell, it is slightly farther away from base at dorsal than at costal margin. There is a narrow subterminal fascia of the same color between veins 2 and 7, broadest in the middle. At outer fourth of costa there is a faint shade of the same color. There are four specimens with the middle fascia. I have thirteen which I consider the same species, in which the middle fascia is

obsolete, being indicated on extreme costal edge by a faint shade. Cilia opposite the yellow are concolorous, opposite the purplish the dark color overruns the cilia at base, but extreme edge is yellow.

Hindwings: very light pinkish straw color; underside pale ochreous, streaked with darker ochreous below costa and in middle of wing.

Underside forewing: ochreous, shaded with pinkish, the central and terminal fasciæ are lightly repeated.

Seventeen specimens: Hastings, Fla., March, April, Sept., Oct., and Nov., A. J. Brown; Burnet Co., Texas, F. G. Schaupp.

The varieties with and without the central fascia occur in both the spring and fall and in both Florida and Texas.

***Sparganothis yumana* sp. nov.**

Expanse, ♂, 14 mm.; ♀, 16 mm.

Head, palpi, thorax, abdomen and forewing light ochreous in the male, and dark ochreous in the female. In the latter there are a few dark scales between lower vein of cell near its outer end and fold, and an almost invisible narrow darker shade from outer third of dorsum to middle of costa. Cilia concolorous.

Hindwing of male same color as forewing; of female, light ochreous, darker around the edges; underside both wings light ochreous in male, darker in female.

One ♂ and one ♀: Yuma Co., Ariz., desert; received through J. B. Smith.

***Sparganothis bistriata* sp. nov.**

Expanse 22-24 mm.

Head and palpi yellow, darker outwardly; thorax yellow, patagia dark ochreous at base and apex; antenna pale yellow; abdomen and legs dirty yellow, latter banded and dusted with purplish-red.

Forewing: bright canary-yellow, strigulated with vertical lines of shining opalescent scales, in a general way following the curve of the termen; these bright lines cross wing from base to termen, and each forms a shining spot on costa. There is a costal line of bright red from base to outer sixth, a similar band through middle of cell from base to end of cell, a slight shade of the same color on dorsum at outer end of fold. Cilia yellow.

Hindwing: above and below pink or dark flesh color, cilia whitish.

Underside forewing: ochreous, shaded with pink through middle of wing, and red on and below costa.

Three specimens: Shovel Mountain, Burnett Co., Texas, F. G. Schaupp; Florida.

***Sparganothis tristriata* sp. nov.**

Expanse 17-23 mm.

Head and palpi: dark ochreous; antenna purplish-fuscous; thorax dark ochreous, patagia wide-red; abdomen light fuscous, anal tuft light brown; legs whitish, powdered with reddish-brown.

Forewing: light canary-yellow, with three wine-red streaks from base to termen. The upper edges, the costa, the middle is above the middle of the wing, and the lower one on dorsum between it and fold, the last is shaded with yellow



along dorsum for inner third. There is a lighter subterminal shade of the same color which joins the outer ends of the three streaks together. The two yellow interspaces are about of equal width to the red streaks. As in *bistriata* there are vertical strigulations of shining iridescent scales, they are more conspicuous on the red streaks, and in the inner part of wing are nearly obsolete on the yellow shades. Cilia yellowish at apex, becoming pinkish at anal angle.

Hindwing: purplish-fuscous, cilia paler; underside gray, with a purplish tinge.

Underside forewing: ochreish-purple, narrowly ochreish along costa, and paler beneath fold.

Five specimens: Duluth, Minn., from C. H. Fernald's collection; Plummer's Island, Md., Sept. 13th, A. Busck. The Maryland specimen is 23 mm., while all of the Minnesota specimens are 5 to 6 mm. smaller.

Cotypes in U. S. Nat. Mus. and Prof. Fernald's collection.

Both this species and the preceding are allied to *S. striata* Wlsm.

#### ***Cenopis saracana* sp. nov.**

Expanse, ♂, 19 mm.; ♀, 20 and 23 mm.

Head, palpi, antenna, thorax and forewing light fawn-brown or light terra cotta; abdomen whitish-fawn, anal tuft light fawn; legs whitish, dusted with dark fawn.

Forewing: light fawn, spotted with dark purplish-fawn. At the extreme base is a shade of the dark color. On the costa at inner third a roughly triangular dark spot; at the outer fourth is a larger darker spot, connecting with a smaller spot in middle of wing, which also connects with a large triangular spot on dorsum at outer third; the three spots with their connecting lines forming an inwardly oblique fascia. The dark markings of the female specimens are larger and more abundant than of the male, the spots of the outer fascia are broader and there is a small dark spot on inner fourth of dorsum in line with the axis of the costal spot above it; there is also a fine strigulation of dark dots on costa between fascia and apex, the outer row of which extends to middle of termen. The forewing of both sexes is strigulated with vertical rows of iridescent dots, of a silvery-bluish hue.

Hindwing: light reddish-terra cotta, white above cell; underside very light fawn, without the reddish hue.

Underside forewing: light yellowish-fawn around the edges, brownish-fawn in middle.

One ♂ and two ♀: Essex County Park, N. J., on hills above Montclair; two flown specimens, July, one bred from larva twisting the leaves of common sassafras; larva found June 13th, moth issued July 6th.

#### ***Cenopis karacana* sp. nov.**

Expanse 18 mm.

Head, palpi and thorax light yellowish-fawn; antenna grayish-terra cotta; abdomen and legs whitish-terra cotta, latter dusted with brown.

Forewing: light yellow, strigulated with vertical rows of shining whitish scales

and marked with light purple spots. The male costal fold, which is very short, and a small shade at extreme base are purple. There is a narrow purple fascia from inner fourth of costa to middle of dorsum, widest on costa and hardly more than a line on lower half. A purple triangular spot on outer third of costa in one specimen sends a fine line to lower third of wing, pointing to anal angle, and two or three small dark dots on costa between the spot and apex.

Hindwing: above and below whitish fawn, cilia the same.

Underside forewing: yellow along costa and termen, white below fold, interior light pinkish-brown.

Two male specimens: one bred from larva crumpling the leaves of bayberry, Anglesea, N. J., June 14th, issued July 9th; breeding No. K. 367; one from larva rolling the leaves of black oak, Essex County Park, N. J., May 30th, issued June 29th; breeding No. K. 224. I have the following notes on the larva of K. 224: "Rolls side of leaf into a tight cylinder; length 12 mm., pale yellow, lighter subdorsal lines on which are tubucules 1 and 2; annulate subspiracular line also lighter. Head jet black, whitish collar separates P. T. shield, which is jet black and large, covering all dorsal area. A long tubecular plate below shield and before spiracle, also a smaller spot at base of leg, jet black. Anal shield nearly round, concolorous with skin, but slightly shining."

### ***Archips brauniana* sp. nov.**

Expanse 19-22 mm.

Head, palpi, thorax and abdomen brownish-gray, with a darker collar between head and thorax; antenna whitish-gray, annulated above with darker gray; legs whitish-gray, powdered with fuscous.

Forewing: shades of light and dark gray, with three velvety brown spots, forming an oblique fascia from base of dorsal margin to costa at outer third. The ground color is whitish-gray, finely and closely dotted with a darker gray, and slightly lighter on outer end of wing. The male costal fold, which is broad and long, is dark gray. At inner eighth of dorsal margin is a narrow velvety dark brown fascia to middle of wing at inner third, separated from it by a gray shade is a large flattened oblong spot extending from upper edge of cell at middle to anal angle, only the upper edge of this spot is dark brown, all of the lower part being a light grayish-brown; from the dark brown upper part a spur is sent outward. A similar dark brown spot on costa at outer third is separated from the middle spot by leaden-gray shade, edged with whitish gray, this costal spot is twice as long on costa as its vertical thickness, and its lower edge is rounded; from the outer edge of this spot a streak of lighter brown runs into termen at lower third, between this latter and the middle spot is an ovate spot of leaden-gray. There is a black dot in costa before apex and one on termen just below apex, and a broken line of black scales below the latter. Cilia concolorous.

Hindwing: smoky gray, whitish above cell, cilia whitish, with a dark basal line. Underside both wings gray, forewing darker.

Seven specimens: Cincinnati, Ohio, June 15th and 17th, Miss Annette F. Braun; New Brighton, Pa., June 22d, F. A. Merrick.

This species will come next to *Archips grisea* Rob., which its color scheme resembles.

***Pandemis pyrusana* sp. nov.**

Expanse, ♂, 22 mm.; ♀, 26 mm.

Head, palpi and thorax light brown, outer joint of palpi and antenna fuscous-brown; abdomen white, anal tuft and legs yellowish-white, latter powdered with brown.

Forewing: light ochreous-brown, with the usual fascia of this genus of a darker shade. The basal area is defined by a nearly obsolete line from costal fourth to dorsal third, this line is outwardly oblique to a third below costa, between which and dorsum it strongly curved inward; between it and the base are more or less obsolete parallel strigulations. The middle fascia, from middle of costa to before anal angle, is constricted above upper fourth, below which it broadens out and the sides are parallel. The outer costal spot begins at outer third, is semi-ovate, with outer end pointed and nearly reaching apex. The dorsal margin is dusted with blackish-fuscous scales, and this dark shade extends up nearly to middle of wing on the inner half of middle fascia, and slightly above dorsum on the inside of basal line, the dark shade extends around the anal angle into the termen to the apex, overflowing on to the cilia which is of the same color. There is a slight dusting of this dark shade on inner fourth of costa.

Hindwing: shining white, becoming yellowish-brown at apex and with a yellowish subterminal shade, cilia white; underside the same, but the yellowish-brown extends further into the wing.

Underside forewing: light yellowish-brown, or terra cotta, slightly darker below costa on inner half and at termen, cilia blackish-fuscous. In the female the dark shade is not so distinct on dorsal margin, and does not overspread the fascia.

Three specimens: Alameda Co., Cal., Sept., larva on leaves of apple; Alameda Co., Cal., June; Los Angeles Co., Cal., Coquillett.

Cotype in U. S. Nat. Mus.

***Tortrix kukakana* sp. nov.**

Expanse 24 mm.

Head, palpi, antenna and thorax light brown; abdomen light brown, white on first segment and lateral scales on first to third segments; legs light brown, banded and dusted with dark brown.

Forewing: clay-yellow or very light brown, vertically strigulated with dark brown. These strigulations concentrate and form a middle fascia and costal spot before apex. The inner edge of fascia is from inner third of costa to three-fifths on dorsum, the outer edge from middle of costa to dorsum just before angle, the outer line is obscurely defined below. Cilia whitish, tipped with dark brown.

Hindwing: white, speckled with fuscous along dorsal margin, and less heavily along termen, with some scales of same color all over the wing, underside the same, cilia white.

Underside forewing: same as upper side, with dark strigulations repeated, but the fascia and costal spot obsolete.

Two specimens: Kukak Bay, Alaska, July 1, 1899, Harriman Expedition, '99, T. Kincaid, collector.

Cotype in U. S. Nat. Mus.

***Tortrix nervosana* sp. nov.**

Expanse 20-22 mm.

Head, palpi, thorax and antenna light buff-brown; abdomen grayish-fuscous, anal tuft creamy-white; legs creamy-white, dusted with brown.

Forewing: light brassy-brown; all veins, especially strong beyond cell, overlaid with fuscous. Cilia concolorous.

Hindwing: grayish-white, darker above dorsum, cilia whitish; upperside cream color.

Underside forewing: smoky or brownish gray, dull ochreous at extreme edge of costa and along termen, cilia whitish.

Three specimens: Winchenden, Mass., July 5th and Aug. 7th, F. A. Merrick; Scranton, Pa., June 17th, A. E. Lister.

This species is of the shape and general appearance of *T. pallorana* Rob., and may prove to be a variety of it, but can easily be separated by the veins being overlaid with a darker shade.

***Tortrix seminolana* sp. nov.**

Expanse 19-22 mm.

Head and palpi: yellowish-brown, with the outer ends of the scales and outside of palpi reddish-brown; antenna and thorax reddish-brown; abdomen and legs yellowish-brown, the latter dusted with reddish-brown.

Forewing: shining yellowish-brown, finely strigulated with non-shining lines of the same color, towards the costa in inner third the yellowish-brown strigulations alternate with reddish-brown. A central fascia, which is nearly obsolete, except at costa and dorsum, obliquely cross wing from middle of costa to dorsum before angle, it is widest below. The fascia is reddish-brown, overlaid on upper fourth with dark leaden-fuscous scales; there are a few scales of the same color above dorsum. The reddish-brown triangular spot on costa before apex is small and also contains a few leaden scales. Cilia dull reddish-brown.

Hindwing: clay-yellow, cilia paler; underside the same.

Underside forewing: very light golden-brown, with a few darker brown scales on costa near base, and a pinkish-brown shade in middle of wing. In some specimens the leaden scales are not present.

Eight specimens: all collected by Wm. Beutenmüller in Florida.

***Tortrix cockerellana* sp. nov.**

Expanse 21-24 mm.

Head: pale yellowish-fawn, whitish within; antenna light fawn, basal joint darker; thorax light fawn, posterior tuft and outer end of patagia white; abdomen yellowish-white, anal tuft light fawn; legs whitish, heavily banded with dark brown and fawn.

Forewing: light fawn, rather evenly mottled with shining whitish spots in oblique lines. There are ten of the spots on costa between base and apex, the

spots reaching to top of cell; there are three to four rows of horizontal spots beneath the costal spots. The spots are separated by the light fawn ground color, which forms irregular oblique lines. There is a line of black scales from middle of wing in upper third of cell and passing through the end of it between veins 6 and 7, it stops before termen and the black scales on the outer end are more scattered; within the cell, above the black line, are two long and narrow pure white shining spots, the black line rounding the lower edge of each, outside the cell is a similar white spot below the black line, with a short spur of black around the outer edge. There are a few scattered black scales in the fold between inner fifth and dorsum. Cilia shining, whitish-fawn.

Hindwing: above and below pure white, with a few light fuscous scales below costa.

Underside forewing: whitish-fawn, with a pink or flesh-color tinge, paler along costa.

Eight specimens: Glenwood Springs, Colo., Aug. and Sept., received from Dr. Dietz, but probably collected by Dr. Barnes; one specimen, U. S. Nat. Mus., "Colo. 2758"; Lamy, New Mexico, Sept. 17th, Cockerell, No. 5642.

Types in U. S. Nat. Mus.

The appearance of this insect is somewhat like *T. houstonana* Grote.

***Tortrix chioceana* sp. nov.**

Expanse 12-14 mm.

Head: golden-brown and ferruginous; palpi light brown, outer end of tuft on outside shaded with ferruginous; antenna light brown beneath, annulated with ferruginous above; thorax golden brown and ferruginous, patagia darker; abdomen and legs pale ochreish, latter dusted with brown.

Forewing: golden-brown, with the scales frequently tipped with ferruginous and mottled with light fawn. The most conspicuous markings are on costa in upper third of wing; before the middle of costa is a large Indian-red spot, curved on under side, which reaches one-third below costa, in it are two vertical light plum color costal spots; close to base is a smaller Indian-red spot, with a plum color center; between these two is a spot of shining pale fawn, divided by a faint ferruginous line; a similar pale fawn spot is beyond the larger red spot; these two light spots continue as fascia to dorsal margin; beyond this is a wider but narrower Indian-red spot with two faint costal yellowish dots, beyond this and into apex the color is pale yellowish-fawn. In the outer end of wing beyond cell are three or four vertical lines of shining scales, whitish, with a faint lilaceous tinge; in the upper half of this space, between the shining lines, is a deeper red shade, in which are tiny dots or buttons of raised scales. Cilia shining pink, pale ochreish at apex.

Hindwing: cream color within, coppery around margins, cilia the same shade, but shining; underside coppery.

Underside forewing: light coppery-brown.

Four specimens: Palm Beach, Fla., bred by Dr. Dyar from larvæ webbing the leaves of *Chiococca racemosa*; record Nos. 15,485, 15,615, and 15,619.

Cotypes in U. S. Nat. Mus.

This species was determined as *Cacoecia georgiana* Walk., with a query, by Prof. Fernald, for Dr. Dyar's paper on "Notes on the Winter Lepidoptera of Cape Worth, Fla.," Ent. Soc. Wash., Vol. IV, p. 466, 1901.

***Tortrix albicomana*** Clem., and varieties.

I have a large series of fifty or more specimens of this species, and find they separate very nicely into four well-defined varieties, with practically no connecting links. Clemens's type, which is well preserved in the Academy of Natural Sciences, Philadelphia, is of the pale lemon-yellow and ochreous form, with only a trace of the ferruginous shading. I have already described, in Can. Ent., XXXVII, p. 9, 1905, as var. *semipurpurana*, the form in which all of the forewing is very dark purple, except a narrow basal area, a narrow band around termen and apex, and a costal spot of yellow, and now propose the following names to identify the other two varieties.

***dorsipurpurana*** var. nov.

Like type, excepting the extreme dorsal edge is stained with dark purple, enlarging at inner and outer fourth and contracted in the middle.

Three specimens: Chicago, Ill., June, J. H. Reading; New Brighton, Pa., June 22d, F. A. Merrick.

***curvalana*** var. nov.

Like type, except the forewing is overcast with a bright ochreish-red, except at the base, and narrowly on termen, which are yellow, and a round yellowish spot in middle of wing at end of cell. A distinguishing feature of this variety is a wide, sweeping curve from outer third of costa to anal angle, which outlines the ochreish-red area.

Ten specimens: Montclair and Essex Co., N. J., June 14th to 28th; one specimen bred from larva on huckleberry.

I think careful breeding may develop the fact that we have more than one species in the above. Besides huckleberry, they have been bred from rose and oak. I believe there is only one brood. The larvæ are among the earliest in the spring, feeding on young leaves in the bud before they have unfolded.

***Phalonia bana*** sp. nov.

Expanse 12-14 mm.

Head and thorax rich brown, speckled with darker and lighter dots; palpi creamy-brown, dotted with darker scales; antenna creamy-brown, obscurely darker between joints; abdomen dark brown; anal tuft ochreous.

Forewing: rich chocolate-brown, mottled with dark brown especially on costa and outer margin, and with two prominent fasciæ or patches of iridescent pink raised scales.

There is a fascia of pink, broadest on costa, enclosing the basal area. It runs obliquely inward to dorsum. Above the middle it is traversed by two brown strigulæ; adjoining it, on the dorsal margin, is a rounded spot of shining raised black scales, mixed with a few whitish scales. Between this fascia and the base along the dorsum are three small patches of pink scales. There is a long oblique streak of pink scales from the middle of the dorsal margin to the costa. Just before the apex and at the middle of the wing it connects with a large circle of the same scales, which occupies the outer third of wing, and encloses an immense ocellic spot. Beyond this circle there is only a flattened triangular patch of the ground color, heavily overlaid with black, running from the costa at apex to middle of outer margin. Between the inner fascia and the outer line of pink scales the ground color forms a well-defined brown band, with the patch of black and white raised scales at its lower end. The costal edge beyond the middle is tinged with rose pink (not metallic), and between the inner fascia and the apex is marked with six black dashes. About nine small black dots are on the costa between base and outer edge of inner fascia. A fine line of black outlines the lower half of the outer margin above the anal angle. There is a small circle of pink raised scales in the apex enclosing a small spot of leaden-metallic scales. This circle is half in the wing proper and half in the cilia. The cilia is brown and ochreous-brown, heavily overlaid with pink and leaden-metallic scales.

Hindwing brown, cilia paler; underside pale brown with dark brown strigulæ.

Underside forewing deep smoky-brown, with costa thickly dotted with creamy-white spots.

Two specimens: Chicago, Ill., June, J. H. Reading.

***Phalonia zaracana* sp. nov.**

Expanse 13 mm.

Head, palpi, antenna, thorax, abdomen, and legs creamy-white or whitish-fawn.

Forewing: the basal area is whitish-fawn, rather heavily powdered with brown on costa and below it towards base. Its outer edge begins at inner fourth of dorsum, and curving slightly outwardly ends at middle of costa. Following this is a broad reddish-brown fascia; its outer edge begins at outer third of dorsum and ends at outer third of costa, slightly curving inward at upper end. The space beyond is a light ochreous-brown, dusted with darker scales at apex. Cilia whitish.

Hindwing: above and below whitish-fawn; cilia the same. Underside forewing light coppery-brown.

Two specimens: Central N. Y., June 6th, and northern Illinois; both from Dr. Dietz.

This species may be a variety of *P. straminoides* Grote, which it resembles. Beyond the central fascia of *straminoides* is a shade of the same color as before the fascia, distinctly outlining it on both sides. In *zaracana* the fascia and outer part of wing are all dark and in strong contrast to the light basal area.

**Phalonia biscana** sp. nov.

Expanse 15-23 mm.

Head: light ochreous-brown on top and in front, darker on sides; palpi, inside light ochreous-brown, darker outside; antenna, light fuscous; thorax, light brown, posterior and tips of patagia lighter; abdomen and legs light ochreous, latter dusted with brown.

Forewing: Narrow and pointed, light brown, with several obscure lines and fasciæ of a darker shade of brown; in some specimens these are almost obsolete. In the most plainly marked they occur as follows: from inner fifth of costa obliquely outward to inner third of wing a third below costa; thence equally oblique inward to a third above dorsum, where it disappears. A similar line starts from middle of costa to end of cell, thence inward to dorsum, a little beyond middle. A narrow terminal line running into apex with an indentation a third below costa; a V-shaped mark on outer fifth of costa; cilia concolorous.

Hindwing and underside of both wings shining gray, slightly ochreous along costa of forewing.

Thirty specimens: Essex County Park, N. J., July 15th to Sept. 12th; New Brighton, Pa., Aug. 24th, F. A. Merrick; Dalton, Glenburn, and Carbondale, Pa., July 29th to Aug. 6th, A. E. Lister; Orono, Maine, Prof. Fernald; No. 39,455, H. G. Dyar.

**Phalonia biscana** var. **giscana** var. nov.

Expanse 13-15 mm.

Similar to above, except that the head parts and thorax are a lighter brown, the forewing a light ochreous-brown. The fascia and lines are a fuscous-brown and well defined on the pale ground color.

Eight specimens: Essex County Park, July 24th to Sept. 15th; one specimen from Prof. Fernald; no locality label, probably Orono, Maine.

**Phalonia bomonana** sp. nov.

Expanse 14-16 mm.

Head: Shining dirty white; palpi dull white, ochreish-brown on outside, apical joint brown; antenna fuscous-brown; thorax dirty white, stained with yellowish in front and at base of patagia; abdomen white with a faint pink tinge; tuft bleached straw; legs whitish, dusted and banded with blackish-fuscous.

Forewing: dirty white, with an inner and outer fasciæ, each consisting of several ochreish-red and reddish-brown spots, separated from each other and outlined by shining white lines. The inner fascia is composed of a round spot on inner fourth of costa, a flattened oval spot in middle of wing, and a shade on dorsal margin. The outer fascia begins as a dark brown streak on outer third of costa, which enlarges into a large oblique oval spot of Indian red, with a horizontal streak of pale ochre through the middle of it. At end of cell, over base of veins 3, 4, and 5, is a smaller spot, and on dorsal margin a triangular spot with its outer angle in anal angle. There is a broad terminal band of dirty yellow and brown; before it, between veins 4 and 6, a similar broader band; between 6 and 7, a long horizontal streak, and a similar shade between 2 and 4; a shade of coppery-red below costa at base. The costa is blackish-brown on the inner fourth.



Between the fasciæ are two dots, and between outer fascia and apex four to six more of the same color. There is a small rounded spot of reddish-brown below costa at outer fifth. Cilia whitish.

Hindwing: dark purplish-gray; cilia white, underside paler; underside forewing dark purplish-gray; the outer half of costa dull ochreous, with a dark spot at end of each vein.

Three specimens: Chicago, Ill., June, J. H. Reading; Hastings, Fla., March 19th, W. G. Dietz, collected by A. J. Brown.

***Phalonia ziscana* sp. nov.**

Expanse 19 mm.

Head: light fawn, shaded with darker above eyes, cream-white, dark fawn on outside; antenna pale fawn; thorax pale fawn, streaked with darker fawn; abdomen and legs grayish-fawn, latter banded and powdered with dark fuscous.

Forewing: light fawn, marked with reddish-fawn and silvery-white lines. There is a streak of reddish-fawn from base to inner fourth between top of cell and costa, its outer edge oblique, and with a darker oblique shade in the middle; below this is a large dark fawn spot, narrow at base, broadening outward, reaching inner third in middle of wing; its outer edge oblique, surrounded by shining white line. In middle of costa a narrow oblique band goes to top of cell; it is darkest on costa. Below is a small, flattened ovate Indian-red spot, circled by shining white at end of cell; below is a paler spot of the same size, below which is a large spot on dorsum, its upper half Indian-red and lower half pale fawn. Both of these spots are enclosed by shining white lines. A line of shining white runs from apex to anal angle; between it and termen is a line of olivaceous-fawn. From the outer fifth of costa a shining white line runs into apex, enclosing a light brown costal spot, and separated from the vertical white line by a small dot of fawn. The light fawn interspaces are more or less streaked with a light olivaceous shade. Cilia light fawn, the lower half preceded by a shining white line which cuts into the cilia.

Hindwing: shining fuscous, cilia paler; underside the same. Underside forewing dark fuscous, lighter along costa, with dark dots at end of each vein.

Two specimens: Hastings, Fla., Feb. 26th, A. J. Brown.

This species, *bomonana* and *obliquana*, are all of the same general design. The arrangement of spots and the colors are sufficiently different to distinguish them.

***Phalonia carmelana* sp. nov.**

Expanse 11-12.5 mm.

Head, palpi, and thorax hoary gray; antennæ yellowish-gray; abdomen light fuscous; anal tuft and legs bleached straw, latter banded and dusted with blackish-brown.

Forewing: whitish-gray, finely speckled with black. Some of these black dots are irregularly arranged in lines, one from outer three-fifths of costa to anal angle and one from outer fourth of costa to lower third of termen; between latter and apex a shorter line from costa. This linear arrangement is not at all constant. There is a shade of pale brown from dorsum at middle to middle of wing. A similar streak crosses veins at end of cell, running into cilia above anal angle,

and a smaller patch before apex; below costa, from base to inner third, is a streak of pale ochreous. Cilia whitish-gray, speckled with black: the black dots are concentrated at the ends of the veins.

Hindwing: light pinkish-gray; cilia paler, with a darker basal line, underside the same. Underside forewing smoky fuscous, with a narrow edging of pale yellow on costa; cilia leaden-metallic.

Twenty-three specimens: Carmel-by-the Sea, Monterey Co., Cal., April, and San Luis Obispo, Cal., March, by Arthur H. Vachell.

***Phalonia carmelana* var. *obispoana* var. nov.**

I have a number of specimens similar to the above, excepting that the brown dorsal and other brown shades are entirely wanting, and in some specimens the black dots are nearly obsolete. I am inclined to think this is a good species, which the discovery of the food plant and breeding will determine.

Fourteen specimens: San Luis Obispo, Cal., March, collected by A. H. Vachell.

***Phalonia wiscana* sp. nov.**

Expanse 17.5 mm.

Head: hoary white, collar faintly tinged with yellow; palpi grayish-white inside, ochreous-brown outside; antenna yellowish-gray; thorax grayish-white, speckled with fuscous; abdomen grayish-fuscous; legs yellowish-white, dusted and banded with blackish-brown.

Forewing: creamy-white, more or less mottled with light wood brown. The basal area is almost uniformly cream-white; its outer edge extends from inner fourth of dorsum to middle of costa. It is very faintly strigulated with pale fuscous, with a darker shade of same color in inner fourth of costa. This is succeeded by a narrow light brown fascia with irregular edges, broadest on dorsum, and ending beyond middle of costa with a darker spot. Beyond this is an irregular creamy-white and mottled fascia, extending on costa to outer fourth and below middle of wing, dividing and sending one fork to middle of dorsum and one to anal angle. The forks enclose a triangular mottled gray-brown dorsal patch. From the costa a narrow curved cream-white band leaves the fascia, reaching termen below middle and follows it to anal angle, where it joins the outer fork of the fascia. It encloses a large oval patch, gray-brown, containing a few black scales in upper end. Beyond the upper half of this curved band, and outlining the apex, is a curved narrow band of brown and black from outer fifth of costa to middle of termen. This is the most conspicuous mark on the wing. Beyond it is a narrow band of cream-white, mottled with pink, outside of which are short brown lines in apex. Cilia whitish towards base and yellowish outwardly, divided by a light fuscous line and marked with fuscous spots at end of each vein.

Hindwing and underside forewing smoky fuscous; underside hindwing yellowish-gray, mottled with light fuscous-brown on upper half and before termen.

One specimen: Milwaukee Co., Wis., F. R. collector, from Dr. Dietz's collection.

***Phalonia basiochreana* sp. nov.**

Expanse 18 mm.

Head, palpi, thorax, and basal area of forewing light ochreous; antenna and abdomen yellowish-fuscous; legs whitish, dusted with blackish-brown.

Forewing: the ochreous basal area extends to inner third on costa and inner fourth on dorsal margin. It is shaded with fuscous at base of costa. There is a large triangular patch of grayish-purple in middle of wing, widest on dorsum, where it extends from yellow basal area to anal angle. It does not reach costa, but ends at top of cell, where the apex of the triangle is flattened. On the middle of costa is a small square spot of grayish-purple, separated from the large lower patch by a yellow line. Below this are two superimposed spots of black surrounded by yellowish-brown. These spots are in the large purple area. Beyond the end of cell is a lunate spot of dull ochreous enclosing a black spot in its upper end. A narrow band of the same color curves outwardly from outer fifth of costa to lower third of termen, thence into anal angle, where it joins the lower end of the lunate spot; this band encloses black spots at costa and above middle. There is a short dash of dull ochreous from costa before apex and an irregular marginal line of the same color from apex to middle of termen. The interspaces between these ochreous bands and spots are grayish-purple, tending to become white below costa; the bands and spots are irregularly outlined with shining white scales. Cilia white with an ochreous tinge, and interrupted by three ochreous spots on upper half, one of which is in apex.

Hindwing: liliaceous-gray; cilia paler; underside whitish, heavily mottled with light fuscous on upper half and before termen. Underside forewing smoky purple; cilia light ochreous, divided by a darker line.

One specimen: Los Angeles, Cal., June, collected by Beverly Letcher.

***Phalonia cincinnatana* sp. nov.**

Expanse 14-16 mm.

Head, palpi, and thorax whitish-gray; antenna yellowish-gray; abdomen grayish-fuscous; legs whitish, banded and dusted with blackish-brown.

Forewing: inner three-quarters whitish-gray, lightly strigulated with light fuscous. A streak of light ochreous-brown from base to inner fourth below costa, and a well defined fascia of the same color from middle of dorsum obliquely outward to upper vein of cell, with a fuscous spot above it on costa. The outer fourth of wing is ochreous-brown, with a darker brown fascia through it from outer fifth of costa to lower third of termen. The narrow terminal line is black. Cilia ochreous-brown, mottled with black.

Hindwing: smoky gray, cilia paler; underside whitish-gray, reticulated outwardly with fuscous. Underside forewing dark ochreous-brown, mottled with ochreous along costa and termen.

Four specimens: Cincinnati, Ohio, April 23d to 30th, Miss Annette F. Braun.

***Phalonia discana* sp. nov.**

Expanse 12-13.5 mm.

Head: light brown on top; face gray-brown; palpi whitish-gray inside, gray-brown outside; outer end of tuft and apical joint black; thorax gray-brown, with four longitudinal black lines; abdomen yellowish-gray; legs whitish, dusted and banded with blackish-brown.

Forewing: gray-brown, sparsely speckled with whitish-gray scales; the extreme costal edge is marked with a number of small geminate pinkish-ochreous spots, separated and divided by short black lines. There is a wood brown fascia in middle of wing, caused by absence of the whitish specks. It is narrow on costa, enlarging below and covering outer end of cell, cut by a line of ground color on fold, leaving a rounded spot below between fold and dorsum. There is a similar patch beyond end of cell, involving anal angle and lower third of termen. A line of black scales outlines it on outer and upper edges, and a similar line cut through it on outer side, paralleling the outer edge. There is a flattened tuft of raised scales in middle of wing at end of cell and another near base of vein eight; also one at anal angle. These tufts, with the outside black lines, form a nearly complete circle, and, as the black lines are finely edged with whitish and a few whitish scales occur in the tufts, the circle, under a low-power glass, appears white. Beyond the black line the apical margin is brown, with a sinuate white edged black line from costa crossing it. Cilia pinkish-gray, with a gray and black spot at end of each vein.

Hindwing: light gray, brownish at apex; cilia grayish-white, preceded by a broad, darker and a thin, paler line; underside the same. Underside forewing smoky brown, dull ochreous, dotted with brown on costa.

Eight specimens: Cincinnati, Ohio, Aug. 17th to 31st, Miss Braun; Plummer's Island, Md., Aug., A. Busck.

Cotypes in U. S. Nat. Mus.

***Commophila huachucana* sp. nov.**

Expanse 22-27 mm.

Head and palpi pure white; a few brownish scales on outer end of palpi, outside; thorax white, with a yellowish tinge; patagia pure white; antenna and abdomen light brownish-white; anal tuft ochreous-brown; legs yellowish-white, dusted with ochreous-brown.

Forewing: basal area pure white, shaded below costa with light fuscous-brown and a few bluish scales. This area extends to inner third on dorsum and nearly to middle on costa. It is toothed outwardly below costa and above dorsum. Beyond it is a broad central fascia of light brown, on which is a horizontal dash of black in middle of wing and a black spot below it. The outer edge is very irregular; a rounded spur leaves it at upper and lower edges of cell and one at dorsum. The outer portion of wing is of the same color as middle fascia, except a large patch of white on upper half, from fascia to outer sixth, which sends a whitish shade to anal angle. The latter is more or less overlaid with light brown, and its outer edge is indented in middle of wing. Before the apex the brown area is rather heavily overlaid with dark brown and black, forming a large crescent-shaped black spot with a leaden band through the middle. The dorsal margin below the fascia and white shade is dotted with black. The termen is mottled with brown and cream-white, arranged in irregular lines. Cilia whitish, mottled with fuscous.

Hindwing: grayish-brown, reticulated with a darker shade; underside grayish-white, heavily reticulated with grayish-brown. Underside forewing smoky brown; outer half of costa spotted and upper half of termen streaked with dull ochreous.

Three specimens: Cochise Co., Ariz., Aug. 1st, from Geo. Franck; Las Vegas, N. Mex., U. S. Nat. Mus.; Huachuca Mountains, Ariz., Aug. 8th to 19th; collector, Dr. W. Barnes; received from U. S. Nat. Mus.

Cotypes in U. S. Nat. Mus.

***Phalonia vachelliana* sp. nov.**

Expanse 13-17.5 mm.

Head: ochreous above and in front, dark brown on side; palpi ochreous, blackish-brown outside; antenna gray; thorax black; abdomen gray; legs yellowish-white, powdered and banded with blackish-brown.

Forewing: inner two-thirds grayish-black, outer third cream color. A shade of light brown and cream, mixed with black scales, crosses the dark area from inner fourth of dorsum to costa; it spreads outwardly below costa to inner third. There is a rectangular black costal spot in middle of light area; in middle of wing below it is a smaller blackish spot, and a third one on dorsum before anal angle. Inside of the latter is a brown spot, outlined with cream-white. The light area is shaded with waves of a slightly darker color and with a shining cream-white line. At the apex is a small blackish shade and a faint spot on costa before apex. Cilia cream-white.

Hindwing: gray; underside darker gray, with indistinct darker dots. Underside forewing smoky black; cilia ochreous, preceded by a broad, blackish line and a narrow ochreous line.

Eight specimens: Cisco, Placer Co., Cal., April and June; collected by Arthur H. Vachell.

***Phalonia listerana* sp. nov.**

Expanse 11-12 mm.

Head and thorax coppery-brown; face, base of antenna, and palpi pale ochreous; abdomen fuscous; legs whitish, dusted with dark brown.

Forewing: base, middle fascia, and fascia before termen coppery-brown, streaked across top of cell with ochreous, and usually outlined with ochreous. The interspaces, consisting of a fascia at inner fourth and one from beyond middle of costa to anal angle, purple madder. The basal area is from inner fifth of costa to inner fifth of dorsal margin, outwardly convex. It is somewhat overlaid with purple madder towards base. The middle fascia is from middle of costa constricted a third below, then broadens to double its costal width at dorsum, where it extends from a little beyond middle to anal angle. The outer brown fascia occupies all of the outer fourth on costa. Its outer edge is straight to lower third of termen; its inner edge, a third below costa, curves outward, then downward to termen above apex. Between this and termen is a narrow band of purple madder, which latter color overflows in the cilia.

Hindwing: smoky black; cilia grayish-white, underside dark gray. Underside forewing dark smoky brown; outer ends of cilia dull ochreous.

Four specimens: Nicholson, Pa., July 4th and 6th, A. E. Lister.

***Olethreutes islandana* sp. nov.**

Expanse 14-15 mm.

Head, palpi, antenna, and thorax light ochreous-brown; thorax darker brown in front; abdomen yellowish-gray; anal tuft pale ochreous; legs yellowish-white; front tarsi banded with blackish-brown.

Forewing: inner half mottled dull ochreous, ochreous-brown, and black in vertical strigulation. The outer edge of this area is a line of black scales from middle of dorsum to outer three-fifths of costa. The outer part of wing is of the same vertical strigulated appearance, but the color is cream-white, the strigulations inwardly are pinkish-yellow, and in outer third shining cream color. At the end of cell there is a small circle of black scales, and a black dot at end of each vein from outer fourth of costa around termen to anal angle. There is a subapical line of black, one dot on each vein. The inner fourth of dorsal margin is rather heavily powdered with black, this streak running to middle of base. Each of the black strigulations begins with a black dot or dash on costa.

Hindwing: brownish-gray, underside paler and reticulated with darker brown. Underside forewing ochreous-brown.

Two specimens: Plummer's Island, Md., May; A. Busck, collector.

Cotype in U. S. Nat. Mus.

***Phalonia formonana* sp. nov.**

Expanse 13-15 mm.

Head: cream-white, brownish on sides; palpi cream-white, ochreous-brown outside; apical joint black; antenna brownish-gray; thorax cream-white; patagia and posterior end of tuft ochreous-brown; abdomen mottled gray and fuscous, tuft dull ochreous; legs cream-white, heavily dusted and banded with blackish-brown.

Forewing: cream-white, with dark central fascia and ochreous-brown outer third. The middle fascia is ochreous-brown, dotted with black on edges of lower two-thirds, and narrowly black on extreme costal edge; its inner edge is from inner third of dorsum to middle of costa. The lower end is broader than the upper. The cream color bordering it on each side is edged with shining scales. The inner fourth of costa is ochreous-brown, dotted with black, with two black dashes between this and fascia. A shade of light ochreous-brown spreads from inner fourth of costa to middle of wing, with a lighter shade overspreading the cream-white except narrowly on dorsum and outer edge of the white area. Between the middle dark fascia and dark outer third is a narrow cream-white fascia, broad on costa, contracted at middle of wing, and broadening again to dorsum, where it is marked with three blackish dots. The outer third contains a large patch of dull ochreous from end of cell, touching costa as a dot at its outer edge and curve of termen at anal angle as two dots. There are two blackish dots, one on costa before apex and one in apex, that send a darker fascia-like streak to middle of wing; the inner edge is outlined with shining white, and the outer edge continues as a shining white streak nearly to anal angle. The upper part of this dark streak is overlaid with leaden-black scales, and a horizontal line of black crosses middle of the whole area from end of cell. Cilia dull ochreous-white by reflected light.

Hindwing: light purplish-gray; cilia whitish, divided near base by darker line. Underside the same but paler. Underside forewing smoky black; costal spots repeated as light ochreous.

Eleven specimens: San Luis Obispo, Cal., March and July, A. H. Vachell.

**Phalonia maiana** sp. nov.

Expanse 7.5–9 mm.

Head, palpi, antenna, thorax, legs, and abdomen cream-white,—last gray above on outer segments before the anal segment.

Forewing: cream-white, shaded with blackish-brown on inner two-thirds of costa, and four or five dots of same color on dorsum. From middle of dorsum a narrow, outwardly oblique fascia, with parallel edges, goes to middle of wing. From the middle of costa a similar semifascia goes to middle of wing. The inner edge of the costal and the outer edge of the dorsal fasciæ run together. From costa before apex a narrow fascia goes to termen just above tornus, diminishing in width below. Beyond it in apex is a shade of ochreous-brown containing a darker costal spot, and a dark spot in the apex is the beginning of a dark terminal line. There is an ochreous streak through middle of wing from middle to outer fascia. The central and other fasciæ are brown dotted with black, especially along their margins. Beyond and parallel with the dorsal fascia are several blackish dorsal streaks. Cilia mottled, gray, brown, and black.

Hindwing: light brownish-gray, cilia lighter; underside light yellowish-gray, reticulated with light brown towards apex. Underside forewing light brown; between veins, in outer half of costa, cream color; the outer fascia repeated strongly, and the middle fascia lightly in black.

Sixteen specimens: Essex Co., N. J., Great Notch, May 4th to 17th.

**Phalonia sublepidana** sp. nov.

Expanse 8.5–11 mm.

Head: bright yellow, darker on top; palpi yellow, dusted with darker outside; antenna yellowish-gray; thorax brown, posterior edge and patagia bright yellow; abdomen above fuscous and tuft light ochreous; legs light gray, dusted with brown in front.

Forewing: basal third and terminal fourth bright yellow with horizontal streaks of ochreous. Between these yellow patches is a blackish-brown patch in the form of a large H, the two upper bars touching the costa and there edged with cream-white, the two lower bars touching dorsum. Between these, both above and below the horizontal bar, are patches of ochreous-yellow. The dark color of the figure H is outlined with shining steely-gray scales. There is a sub-apical line of shining cream-yellow. The inner half of costa is narrowly shaded with brown. Cilia ochreous.

Hindwing: purplish-black, cilia paler, with a broad darker line near base; underside grayish-purple. Underside forewing ochreous-brown internally, ochreous around margins.

Five specimens: Essex County Park, July 4th to 7th; Caldwell, N. J., July 1st to 8th.

This species is close to *lepidana* Clem., and I have had it so labelled with a query for some years, but a recent comparison with Clemens's type in the American Entomological Society's collections proves it to be distinct. I also positively identified as *lepidana* a long series of specimens caught several years ago resting on, and

flying up from when disturbed, common horse-mint (probably *Mentha longifolia*) in Jefferson Co., W. Va., at the end of July. Numerous small Tortricid larvæ were later found in the seeds and dried flower sheaths, but I did not succeed in rearing them.

***Phalonia aurorana* sp. nov.**

Expanse 11-13 mm.

Head: speckled gray and brown; palpi cream-white inside, shaded with blackish-brown below and outside; antenna light brownish-fuscous; thorax light pinkish-white, with a dark pink median streak; patagia grayish-brown; abdomen light gray, anal tuft pale ochreous; legs cream color, shaded with brown in front.

Forewing: shining pink, with obscure ochreous-brown fascia and spots as follows: an outwardly oblique fascia from middle of dorsum to costa beyond middle; a narrow fascia from costa before apex to middle of termen; a rounded spot in lower half of wing above tornus. The lower half of the middle fascia is sprinkled with black scales on both sides. There is a small patch of black scales in middle of subapical fascia, and also on the inner and upper edges of the round spot above tornus. There are a few black scales in the shining pink ground color between the middle fascia and round spot, and above the round spot the inner half of costa is very narrowly edged with black. Cilia ochreous, preceded by a black terminal line, and spotted with five evenly spaced patches of black scales between apex and tornus. The black scales are longer than the ochreous scales of the cilia, and each of the five patches sends a little prominence beyond the outer ciliate line.

Hindwing: very light yellowish-gray, cilia paler; underside the same, with a row of brown dots between veins 5 and 6. Underside forewing smoky brown; outer half of costa dotted with pale pink; ciliate spots repeated.

Eight specimens: Essex County Park, N. J., light trap, Aug. 22d to Sept. 7th; Kennebunkport, Maine, from Dr. Holland's collections, Carnegie Museum, collected by G. H. Clapp, August.

***Phalonia voxcana* sp. nov.**

Expanse 12.5-13.5 mm.

Head, palpi, antenna, and thorax very pale whitish-ochreous; abdomen gray; legs whitish, dusted in front with brown.

Forewing: basal area grayish-white, with a faint pinkish tinge, lightly dotted on costa with brown. Central fascia broadest on dorsum, roughly triangular, reddish-brown, shaded with black on edges of lower half, and a horizontal streak across middle. Beyond this is a large round spot,—the outer edges shining pink, the interior light pinkish-brown, with a horizontal black streak through the middle and an obscure shade of blackish on its outer half. Above this the costa is shining pink, marked with three blackish-brown dots. The terminal edge and cilia are shining pink, shaded with blackish at apex.

Hindwing: gray, cilia very slightly paler; underside gray, mottled on upper half with brown. Underside forewing smoky black; costal and terminal edges dull ochreous.



Four specimens: Hampton, N. H., Aug. 24th, S. A. Shaw; Ottawa, Can., Aug. 16th, C. H. Young; Kennebunkport, Maine, July and August, collected by G. H. Clapp, from the Carnegie Museum.

***Phalonia viscana* sp. nov.**

Expanse 12 mm.

Head, palpi, antenna, thorax, and abdomen light gray, mottled with darker gray; palpi ochreous-brown outside; legs cream-white, shaded with dark brown in front.

Forewing: the basal area is whitish, rather heavily overlaid on and below costa, on dorsal and outer margin and at base with blackish-fuscous. The oblique middle fascia is ochreous-brown, with a whitish dot above and another below middle, both on the outer edge. The outer third of wing is pink, with a brownish-pink fascia through it from costa before apex to middle of termen. This fascia is edged on both sides with shining pink, and the same color edges the inner side of the pink area. Outer third of costa closely spotted with grayish-black. Terminal edge and cilia a uniform shade of ochreous. This shade extends completely around tornus to outer fifth of dorsum.

Hindwing: light gray; underside paler, with a row of blackish dots between veins 5 and 6. Underside forewing smoky black, cilia ochreous.

One specimen: Essex County Park, N. J., May 20th.

***Phalonia foxcana* sp. nov.**

Expanse 11-12 mm.

Head: speckled, whitish and dark gray; palpi whitish inside, grayish-brown outside; antenna gray; thorax speckled brown and gray; posterior end of patagia whitish-gray; abdomen dark gray; legs whitish, dusted with dark brown.

Forewing: almost uniformly dark gray, with a cinereous tinge. There is an obscure outwardly oblique grayish-brown middle fascia and a round spot of the same color between end of cell and termen. The costa before the middle fascia is paler, dotted with blackish-brown; beyond the fascia it is creamy-gray, marked with four blackish dots, and another in the apex, which is followed by five others evenly spaced on the terminal cilia. The dorsal margin is finely dotted with black. The outer round spot is obscurely edged with shining scales. Cilia, between the black spots, speckled light and dark gray.

Hindwing: gray, cilia gray, with a fine whitish basal line; underside gray, mottled with fuscous on upper half. Underside forewing smoky black; costa, between veins on outer half, dotted with cream-white.

Three specimens: Cincinnati, Ohio, Aug. 18th, Miss Braun; Plummer's Island, Md., August, A. Busck.

Cotype in U. S. Nat. Mus.

***Phalonia elderana* sp. nov.**

Expanse 12 mm.

Head, antenna, and thorax light ochreous-brown; palpi cream-white inside, ochreous-brown outside; abdomen ochreous-gray; anal tuft pale ochreous; legs whitish, shaded and banded with blackish-brown.

Forewing: light shining ochreous-brown, with fascia and spots of the same

shade, but not shining. The basal area is vertically strigulated with the dull color. Its outer edge extends beyond third on both dorsal and costal margins. It is succeeded by a dull fascia, twice angulated on both inner and outer edges, and crossed near dorsum by a line of shining scales; above this line on fold is a small cluster of black scales. There is an obscure dull fascia before apex, from costa to middle of termen; this connects with a dull shade above tornus, which sends a streak up to end of cell. Cilia light ochreous-brown, cut at end of each vein with darker brown. The dark color expands on the outer ends of the cilia.

Hindwing: light fuscous gray, cilia paler; underside whitish-gray, with vertical brown strigulations on outer half. Underside forewing light brown, paler around margins; costa and cilia dotted with darker brown.

One specimen: Bred from larva spinning together the young terminal leaves of swamp elder, June 15th, issued July 6th, Anglesea, N. J.

***Phalonia nonlavana* sp. nov.**

Expanse 12.5-13 mm.

Head: whitish, gray on sides; palpi white within, grayish-brown outside; antenna light gray; thorax dark gray in middle, patagia and posterior end tipped with whitish; abdomen grayish-fuscous, with a blackish band on third and sixth segment above; legs whitish, dusted with light brown.

Forewing: basal area outwardly oblique from dorsal third to costa between third and middle; shining whitish, costa marked with black, two long streaks near base and several small ones between these and middle fascia; a row of black dots a third below costa, and a small black dot on dorsum close to base. The middle fascia has nearly parallel edges; it is brown, somewhat broken with whitish ground color below middle, and ending in a blackish costal spot, edged with black lines and angling outwardly. Beyond this is a shining whitish fascia of about the same width, but not sharply defined on either edge. It is somewhat mottled with ochreous-brown and gray and contains two black dots on costa. The outer edge is mottled with black, brown, and gray. A conspicuous fascia starts from costa before apex, reaches termen at middle, continues to tornus, and turns up to middle of wing at end of cell. It is brown on upper third, with three black costal dashes, black in the middle of wing, brown below and on the inner spur, whitish and gray at tornus. There is a brown streak before apex, and the black terminal line is inwardly edged with ochreous. Cilia light ochreous, with an apical and five terminal blackish dashes on the outer ends only.

Hindwing: light gray, underside whitish-gray, spotted with fuscous between veins 5 and 6; these spots are very faintly repeated above. Underside forewing smoky brown, with five cream-ochreous costal spots and the ciliate spots repeated.

Two specimens: New Brighton, Pa., June 20th, F. A. Merrick; Pittsburg, Pa., June 17th, Henry Engel.

***Phalonia toxcana* sp. nov.**

Expanse 10-12 mm.

Head: white, posterior edge and over eyes shaded with gray-brown; palpi white within, brown speckled with black outside; antenna gray; thorax mottled white and gray, with a transverse, obscure black line before middle; abdomen

shining gray-fuscous, anal tuft dull ochreous; legs whitish, banded and powdered with bronzy-black.

Forewing: pale pinkish-cream, the ground color of the outer third pale whitish-pink. The basal area extends beyond third on both margins. The costa is marked with two small black dots close to base; a large rectangular blackish spot in middle and two or three small dots between the latter and middle fascia. There are two small blackish dots on fold close to base and a larger dot on dorsum near base. The outer edge below fold is speckled with black. The middle fascia begins as a large square blackish spot on costa, obliquely outward; below it, inwardly, an olivaceous fascia continues to dorsum. Its edges are dentate, on the fold and on the outer edge at dorsum are black dots. The blackish middle costal spot sends an obscure streak of black into dorsum before tornus; on the middle of the wing it is interrupted by a patch of shining white, and a similar larger pinkish patch covers the dorsum between the two fascial ends. A conspicuous fascia leaves costa before apex, curving into termen at upper third, diminishing below; is black on costa and before apex, with a small olivaceous patch between and below. It encloses a large spot of shining white, mottled with gray and olivaceous. Above it is a patch of pink with two dark costal dashes. There is a small brown shade in apex, with two dark costal spots before apex on a pink ground. Terminal line black, cilia ochreous, outwardly dotted with black.

Hindwing: whitish-gray, darker around margin; cilia paler; underside the same, shaded and dotted with dark brown below costa. Underside forewing smoky brown, with costal and ciliate spots repeated.

Twenty specimens: Essex County Park, N. J., Aug. 16th to Sept. 11th, light trap.

***Phalonia zoxcana* sp. nov.**

Expanse 8-11 mm.

Head: dark gray; palpi whitish within, dark brownish-gray outside; antenna gray; thorax gray-black, tips of patagia and posterior tuft whitish; abdomen above fuscous, tuft ochreous; legs whitish, banded with blackish.

Forewing: basal area shining, pinkish-white, costal, dorsal and basal margins shaded with olivaceous, and costa dotted with blackish line, a black dot on dorsum near base and a larger vertical streak at lower half of outer edge. The middle fascia is olivaceous-brown, edges irregular, edged with black on costa and a black dash on fold, outwardly, in middle is a short vertical black line. The subapical fascia combines with a black patch before it, in a large rounded black spot, divided by a line of shining gray scales. Below is a patch of olivaceous-brown, and between these dark shades and the middle fascia is an irregular fascia of shining pink, dotted with black on costa and enclosing an olivaceous patch on dorsum, the latter containing three black dorsal dots. Before the black terminal line is a narrow olivaceous brown line, and before this a line of shining pink and gray scales. Cilia divided into four ochreous and five blackish spots of about equal size.

Hindwing: dark gray, cilia paler, with a broad, darker line near base; underside the same, dotted with fuscous between 5 and 6.

Underside forewing: smoky black, with costal and ciliate spots repeated.

Eight specimens: Cincinnati, Ohio, May 21st to June 2d, and Aug. 17th to 24th; Miss Annette F. Brown.

This species is close to *toxcana* K., but can be separated by the extensive black spot in apex.

***Carposina comonana* sp. nov.**

Expanse 16-18 mm.

Head and thorax gray, mixed with brown and black; pale gray within; outside shaded with blackish-gray; antenna yellowish-gray; abdomen yellowish-fuscous, anal tuft pale ochreous; legs grayish-white, front pair heavily powdered with bronzy-brown.

Forewing: narrowly at base and the outer third brownish-gray; between these dark spaces is a wide white fascia, equal in width to half the length of wing; across the outer third of the white area is a curved, light fuscous fascia of spots as follows: on the costa at middle a bronzy-black spot, on top of cell a dark fuscous spot, in upper half of cell a streak and in lower half a larger spot; on dorsum at inner third is a shade of fuscous. A narrow curved line of fuscous parallels the upper half of outer edge of white area. The costal edge in white area is fuscous gray. The dark basal area is widest at costa, curving convexly to dorsum, its widest part is not more than one-seventh the length of wing. The outer edge of white fascia is convex outwardly, starting from costa between middle and outer third, curving to end of cell, thence inwardly to dorsal margin between middle and outer third. The dark area of outer third is marked with an ochreous dash on costa, apex and termen at end of each vein; these dashes are shaded inwardly with black; in the middle of the dark area is a wide streak of black dots, paralleling the edge. At the proper angle the veins in this area are seen to be overlaid with bronzy-brown. Cilia fuscous-gray, sparsely dotted with whitish, and with an ochreous streak from each vein.

Hindwing: light purplish-gray, paler at dorsal edge and base, cilia with a bronzy tinge; underside the same.

Underside forewing: blackish-gray, ochreous spots repeated on outer half of costa, cilia ochreous at base.

Two specimens: San Francisco, Cal.; one from U. S. Nat Mus., no locality, but bearing labels "No. 2617 Apl. 22-82" and "W. knows nothing about it, 1 left. C. V. R. 86."

Cotype in U. S. Nat. Mus.

***Eucosma boxcana* sp. nov.**

Expanse 12-18 mm.

Head: ochreous-brown, face darker; palpi pale ochreous, brownish-ochreous outside, apical joint dark brown; antenna fuscous; thorax gray-brown, minutely speckled with ochreous; abdomen and legs grayish-ochreous, latter dusted and banded with brown.

Forewing: gray-brown; upper half finely atomized with whitish-gray, excepting the costal streaks, which are clear brown. There is a large white dorsal spot extending on dorsum from inner to outer third; its inner edge is sharply outwardly oblique, the outer edge is very slightly oblique; the solid white color ex-

tends to fold, but above fold the spot gradually shades into the ground color, disappearing above middle; there are three or four parallel brown lines in this spot, usually extending to fold, but in some specimens one or more are merely dorsal dots. Before and behind this white spot the ground color is darker brown. The costa between middle and apex is marked with five long, clear, brown lines of about equal length; in the most intensely-marked specimens there is a grayish-brown dot between some of the lines. There is a subapical brown line to upper third of termen, with one or two brown dots below it in middle of termen. The ocellic spot is large, shining gray, with a horizontal brown dash above and an inwardly curved brown dash below, the latter in weakly marked specimens consists of an inner and outer dot; the outer and upper sides of the ocellus are defined by a curved brown line, which very faintly connects with the middle one of the group of costal lines. Cilia gray, basally speckled with pale ochreous, and at tornus outwardly tipped with white.

Hindwing: light grayish-brown, darker at apex, cilia grayish-white; underside paler.

Underside forewing: light smoky brown, slightly paler along costa and grayish white below fold.

Ten specimens: Caldwell, N. J., May 17th; Plummer's Island, Md., May 11th, A. Busck; Philadelphia, Pa., June 4th, F. Haimbach; Cincinnati, Ohio, May 18-21, Miss Brown; Kerrville, Texas, Dr. Barnes; Iowa, C. P. Gillette.

Cotype in U. S. Nat. Mus.

***Eucosma womonana* sp. nov.**

Expanse 15-16 mm.

Head and palpi ochreous-gray, latter shaded with fuscous outside, apical joint black; antenna fuscous-gray; thorax gray, patagia brown at base, ochreous-gray outwardly; abdomen cinereous; legs light ochreous, dusted and banded with blackish-brown.

Forewing: blackish-brown, strigulated with whitish-gray on the inner half of the basal area, with an indistinct dorsal spot, and with costal streaks of the same shade. The outer half of basal area is the blackish part of wing, on dorsal margin it extends beyond inner third; the outer edge is indented, inwardly half-way between dorsum and fold, above the fold it is obliquely inward to inner fourth of costa. The dorsal spot in width is less than one-sixth length of wing, it extends to fold, and its inner edge sends an oblique line to inner costal spot. From the outer fourth of costa to apex are five pairs of costal spots, the three inner pairs are subdivided; the second pair send long oblique lines into the inner ocellic bar; the third pair sends lines beneath the fourth pair and curve downward to a leaden spot on margin, above middle; the fifth, or subapical pair, point toward the same spot. On the costa these marks are yellowish-white, becoming grayish-white below, with a few grayish-metallic scales. The ocellic spot is well within the termen, it contains three horizontal black lines, and a black dot below, a broad inner bar, an outer spot above and a dot below of leaden-metallic, edged with whitish. The subterminal line is broad, blackish-brown, finely dotted with yellowish-white, with a white dash below apex, which curves inward and with the outer half of the subapical costal spot, encloses a small round spot of ground color. Cilia shining gray, tipped with yellowish.

Hindwing: smoky fuscous, paler at base, cilia gray, with a broad darker basal line and a faint thin darker line near outer edge.

Underside both wings: grayish-brown; forewing darker and costal spots repeated.

Two specimens: Cincinnati, Ohio, June 9th and July 11th; Miss Brown.

***Eucosma walkerana* sp. nov.**

Expanse 10-12 mm.

Head, palpi and antenna yellowish-gray, palpi darker gray on ends; thorax gray, abdomen light gray, legs whitish-yellow, powdered with brown.

Forewing: basal area leaden-black, a middle white fascia, outer two-fifths pale ochreous, slightly ferruginous in apex, mottled with black and darker lines and dots. The basal area on dorsum extends to inner third, its outer edge is slightly outwardly oblique to middle, then angles slightly inward reaching costa at inner third; it is grayish black, strigulated with darker lines and suffused with whitish near base below costa; the extreme costal edge is marked with five or six whitish dots. The middle fascia is only half the width of basal area and is not sharply defined on outer edge, it is constricted on upper third where it is overlaid with gray and two leaden lines from costa. Beyond it is an ochreous-brown fascia of about equal width, only defined on lower two-thirds of wing, on outside edge above dorsum is a blackish brown spot connected by a line with a short vertical line of same color on inner edge of fascia, below these dark spots the dorsal edge is gray-brown, on the upper third this fascia diminishes to a line at costa. Beyond the white fascia the costa is marked with four white spots, each containing a blackish dash. The ocellic area is pinkish-white, with vertical shining leaden side-bars, the inner connects with the middle geminate costal spot and the outer with the spot before apex, the connecting lines are often obscure and much broken. There is a large triangular patch of a ferruginous-ochreous in the apical fourth, with a few scattered black scales. Terminal line black, distinct only above ocellic area. Cilia shining leaden, tipped with black at apex.

Hindwing: light brown, cilia whitish-gray; underside whitish gray.

Underside forewing: smoky brown, costal spots repeated.

Five specimens: bred from larvæ in hazle catkins, U. S. Dept. Agriculture, breeding No. 2917, issued June 20th to July 9th; I have fifteen specimens from Nicholson, Pa., July 4th to 24th, collected by A. E. Lister. Five specimens: Mountain Lake Park, Md., July 26th, Miss A. F. Braun.

The species is close to *E. transmissana* Walker, and is named in honor of its author.

Cotypes in U. S. Nat. Mus.

***Eucosma snyderana* sp. nov.**

Expanse 28 mm.

Head, palpi and thorax white, speckled with pale olivaceous-gray; antenna white; abdomen gray, anal tuft white; legs whitish, banded and dusted with dark brown.

Forewing: white, overlaid with pale gray, especially between the veins; with a darker basal shade, large dark crescent-shaped spot on lower half of wing before anal angle and a darker terminal patch. The basal area is light brown dotted with dark brown, it is edged outwardly with an oblique line of dark brown dashes, interrupted on the veins, it begins at outer third of dorsum and is defined only to upper third of wing. A gray shade in the upper third of wing extends from base to end of cell. The crescentiform spot is broadest on dorsum, its upper end curving inward, hook-shaped, it is inwardly edged with dark brown dots and a cluster of the same on its outer edge. Before the termen are two vertical irregular lines of brown dots. There is a large quadrate brown spot in apex, and a similar but paler one on lower third of termen. Costa white, dotted with dark brown. Cilia whitish, gray at base.

Hindwing: light grayish-fuscous, cilia whitish, with darker line near base; underside lighter.

Underside forewing: smoky gray, costa darker dotted with white.

One ♂ specimen: Blackfoot, Idaho, June 3d, Arthur J. Snyder.

***Eucosma idahoana* sp. nov.**

Expanse 21 mm.

Head, palpi and thorax olivaceous-yellow, posterior sides of thorax edged with silver; antenna cream-white, annulated with olivaceous; abdomen light olivaceous-gray; legs whitish, dusted with dark brown.

Forewing: olivaceous-yellow, with horizontal silver lines. The costa, beyond male fold, is silver, interrupted by two spots, one beyond end of cell and one before apex. A line from base to end of cell through middle of cell, a duplicate line above its outer half, the ground color between the two dotted with brown. A silver line on outer half of fold and another the whole length of vein 1b. Beyond the cell, between veins 3 and 8, the spaces between veins is silver, the veins being dotted with brown. There is a silver terminal line, edged outward narrowly with dark brown and inward with a line of olivaceous yellow. The apical and subapical spots of ground color are dotted with dark brown, and a line of the same are above and below the silver line in outer fourth of fold. Cilia yellowish-white.

Hindwing: light smoky gray, cilia whitish; underside the same.

Underside forewing: olivaceous-gray, whitish on costal and terminal edge, cilia whitish.

One ♂ specimen: Blackfoot, Idaho, June 3d, Arthur J. Snyder.

***Eucosma vomonana* sp. nov.**

Expanse 15-17 mm.

Head light ferruginous-brown, darker over eyes and around collar, palpi grayish-brown, blackish on outside and outer joint; antenna gray; thorax blackish in center, patagia brown at base, striped with pink and white outwardly; thorax cinereous gray; legs yellowish-white, dusted with dark brown.

Forewing: light gray, with a brownish tinge, the tips of the scales are somewhat paler, giving a speckled appearance under a lens. On the middle of dorsum is a broad white patch, with three brown dots on dorsal edge, it is broadest at base, the inner edge is outwardly oblique, the outer edge nearly vertical, it ex-

tends nearly to middle of wing. Before this white patch is an inverted wedge-shaped black spot, overlaid above with light brown. A darker shade from middle of costa forms a fascia that separates the white patch from a gray ocellic spot, the lower half of fascia is dotted with black. The ocellic spot is edged before and behind narrowly with white and a small spot of white color in middle. The black apical spot and a similar costal spot before apex, continue as brown lines to middle of wing, where they join and continue as a single line to termen above apex, the brown is somewhat dotted with black. The male fold is pinkish-white, dotted with dark brown, the second fourth of costa is dark brown, between the middle and spot before apex it is marked with three whitish geminate dashes. Terminal line blackish-gray; cilia leaden-gray, cut with a whitish streak below apex.

Hindwing: smoky brown, cilia gray, with a light basal line, followed by a darker line; underside lighter, reticulated on upper half.

Underside forewing: dark smoky brown, costal spots repeated.

Six specimens: Cisco, Placer Co., Cal., June 1st; Colfax, Placer Co., Cal., July, all collected by A. H. Vachell.

***Eucosma miscana* sp. nov.**

Expanse 16-19 mm.

Head: light brown; palpi cream color inside, and upper edge, the brush outwardly and at the end, both inside and outside, dark gray; antenna gray, annulated with light brown; thorax black, with a transverse pale ochreous line, the posterior edge and patagia same color; abdomen fuscous; legs yellowish, banded and powdered with blackish-brown.

Forewing: pale ochreous, strigulated with black in basal area, a middle fascia of same color but more heavily and evenly overlaid with black, this ground color in outer half, below costa, is a dusky olivaceous-yellow. Between basal area and middle fascia is a broader whitish-gray fascia strigulated with black. The basal area extends to inner third on dorsum, indented below fold, angling outward on fold, then obliquely inward to inner fourth of costa, but indented at upper third. The whitish fascia, beyond it, begins as a geminate yellow spot on costa, it broadens outwardly to dorsal margin. The ochreous and black fascia extends from middle of wing to dorsum before anal angle. The ocellic spot consists of two vertical bars of pinkish shining scales enclosing a black streak, the bars are nearly joined above and below, and above and before them is another short curved line of the same scales separated from the ocellus by a black dash. There is a similar shining line before termen in middle of wing and below it, in angle, a small spot. Between the shining spots and the dusky yellow streak below costa, the ground color is black, finely atomized with white. At middle of costa are two geminate white streaks, close together, between them and apex are three others, more widely spaced, each encloses a black line, and below upper fourth they change to metallic-blue; the one before apex sends a white dash through the cilia and terminal line below apex; the second and third before costa join and run into the shining line before termen. There is a fine black terminal line, interrupted below apex, and not reaching angle; beyond this line is a line of gray which extends around termen. Cilia pinkish-gray.



Hindwing: light grayish-brown, cilia the same, underside the same. darker at apex.

Underside forewing darker.

Thirty specimens: Cisco and Colfax, Placer Co., California, June and July, A. H. Vachell.

**Thiodia kiscana** sp. nov.

Expanse 12-13 mm.

Head, palpi and thorax white, a light fuscous spot on outside of palpi near base of second joint, and a shade of the same color, both inside and outside, at end of second joint, patagia shining grayish-ochreous; antenna white, finely annulated with fuscous; abdomen grayish-fuscous; legs white, tarsal joints ringed with blackish-brown.

Forewing: pale fawn, with a darker shade in middle of wing from base to end of cell, and another on upper half of wing from before end of cell into apex. The inner half of costa is narrowly blackish, edged internally with white, beyond the middle are four large black streaks and four fine black dashes on a white ground; all outwardly oblique, excepting the white line before the light brown apical spot, which is inwardly oblique, and is edged with blackish scales on each side; the white line, from between the two middle large spots, runs obliquely outwardly and nearly connects with the white line before apex. The ocellus is large, lustrous, white, with a long black line above and one or two shorter ones below it. Below the fold the dorsal margin is sparsely overlaid with white scales. The terminal edge and cilia are light gray, finely powdered with blackish dots.

Hindwing: light gray, smoky towards termen; underside whitish-gray.

Underside forewing: smoky ochreous-brown, costal spots repeated.

Ten specimens: Cincinnati, Ohio, May 27th, Miss Annette F. Braun; Greenwood Lake, N. J., June 10th; Gloucester Co., N. J., May 29th, F. Haimbach.

**Epinotia dietziana** sp. nov.

Expanse 13-15 mm.

Head: pale ochreous on top, basal joints of antenna, face and palpi white, latter shaded with brown outside; antenna whitish brown; thorax grayish-white above, beneath and tuft white; legs whitish, dusted and banded with blackish-brown.

Forewing: a broad white fascia between inner fourth and middle on costa, enlarging below top of cell and reaching inner fourth to outer third on dorsum. The basal area is gray, with a whitish transverse streak through middle and edged outwardly with black; there are a few black scales on the inner edge of the white streak. The broad white fascia is dotted on costal and dorsal edges with gray; beyond it is a gray fascia, beginning at middle of costa as a blackish spot, continuing to middle of wing as a gray line; at end of cell, in middle of wing, is a small black spot, this is continued as a broader gray fascia to dorsum before anal angle. The space beyond is white, inwardly overlaid with gray and outwardly bordered by dark ochreous-brown, the latter color in a shade beneath costa for outer fourth and running into a conspicuous black ocellic spot. The outer half of costa is marked by four pairs of white oblique lines, divided by narrow black lines, and each pair separated by a larger black spot. The ocellic

area is shining white, with a vertical row of brownish scales. Termen above middle is bordered by a fine black line running into apical spot. Beyond this is a narrow yellowish line in cilia, the latter is blackish with ochreous brown tips.

Hindwing: smoky gray, preceded by a faintly lighter basal line; underside the same, cilia concolorous.

Underside forewing: smoky brown, with the geminate whitish spots repeated on costa.

Twenty specimens: Hampton, N. H., May 28th to July 3rd, S. Albert Shaw; Hazleton, Pa., at electric light, May 19th to June 8th, collected by W. G. Dietz, M.D., and to whom I am indebted for a hundred or more very interesting Tortricids.

### ***Cydia colorana* sp. nov.**

Expanse 22-24 mm.

Head and palpi clay-white; antenna leaden-fuscous; thorax leaden-fuscous, tips of patagia and posterior edge of thorax white; legs cream-white, lightly dotted with fuscous.

Forewing: ground color, base of scales fuscous-brown, outer half gray to pinkish-ochreous, under a lens as a finely reticulated surface of alternate, dark and light vertical lines; below the fold of wing the light tips are gray, becoming ochreous above outwardly and shaded with pink on the outer half above the middle. The ground color is traversed by numerous irregular broken lines of shining leaden scales. The costal edge is narrowly cream-color, with a small black spot beyond middle and four larger ones between it and apex. From the cream-color spaces between these spots the leaden lines begin; the two before apex extend only to upper third, and a single line begins close to termen at middle of wing, and continues to anal angle; before these ante-apical streaks are two others which join at middle of wing and continue to anal angle as a single line, dotted inwardly and outwardly with black below the middle. The other leaden streaks are edged with black dots more or less, usually on their inner sides. The terminal line is black, before which is a pale ochreous line. Cilia shining gray.

Hindwing: smoky gray, whitish above cell, cilia whitish, with a gray line near base; underside the same.

Underside forewing: smoky brown, costal edge yellowish, and a line of same color preceding a blackish terminal line.

Four specimens: three, Glenwood Springs, Colorado, June 1st, Dr. Wm. Barnes, received from U. S. Nat. Mus.; one, Salida, Col., June 19th, "Hulst collection" from Dr. Dietz.

### ***Cenopsis chambersana* sp. nov.**

Expanse 22-25 mm.

Head: ochreous-brown, a shade darker on the anterior edge of the frontal tube; palpi pale ochreous within, outside ochreous-brown, darker at end of tuft; antenna light grayish-ochreous; thorax ochreous-brown, darker than head, posterior end of patagia paler; abdomen yellowish-white, with white scale tufts on first segment above; legs yellowish-white, powdered with bronzy-brown.

Forewing: light ochreous-brown, vertically strigulated, shining purplish-brown,

with several lines and spots of the same shade as follows: below costa at outer fourth is a spot from which a fine line crosses wing obliquely to dorsal edge beyond middle; at end of cell, below middle of wing, another spot which sends a line into dorsum before angle; from a dot at outer third of costa an irregular line curves outward and downward ending in tornus; a faint terminal line. The costa is evenly marked with the upper ends of the reticulations. There is a very short but broad costal fold in the male. Cilia concolorous, shining, with a faint pinkish tinge.

Hindwing: white, lightly stained with ochreous on outer half, which color runs into the cilia; underside pale ochreous.

Underside forewing: light ochreous-brown, with darker reticulations on costa.

Ten specimens: Cincinnati, Ohio, June 12th to July 6th, Miss Annette F. Braun.

I take pleasure in dedicating this species, which differs from any *Cenopsis* known to me, to the one of the two pioneers in North American Micro-Lepidoptera, and whose interests and labors were so largely associated with the place of its habitat, V. T. Chambers.

***Eulia niscana* sp. nov.**

Expanse 15-17 mm.

Head: light brown, shaded on sides with darker ferruginous-brown; palpi blackish-fuscous, underside at base pale ochreous; antenna dark fuscous, annulated with yellowish-white; thorax dark ferruginous-brown, patagia and posterior end light ferruginous-brown; abdomen cinereous; legs light ochreous, dusted with brownish-fuscous.

Forewing: reddish-brown, crossed by three narrow shining white fasciæ. The inner is from first quarter of costa to before middle of dorsum. The middle one from middle of costa to anal angle, where it coalesces with the lower end of outer fascia, which starts on costa before apex as a geminate spot; in some specimens this fascia is broken below costa. The white fasciæ are outlined with black scales in the middle of wing, and a dot of black scales in the middle of wing and a dot of black is enclosed in the middle fascia, at end of cell. The edges of the fasciæ are irregular. Between the inner and middle fascia there is a shining patch of pinkish scales on the lower half of wing. The dorsal margin is narrowly dotted with black. Cilia at apex dull brown; below apex, white at base, shading into dull ochreous outwardly.

Hindwing: gray, cilia whitish-gray, with a darker line near base; underside gray, smoky gray below costa.

Underside forewing: smoky brown, with a large middle, and before apex, a smaller geminate costal spot of cream white.

Three specimens: Carmel, California, June, collected by A. H. Vachell.

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### ERRATA.

- Page 2, line 19, for **sinicolana** read **pinicolana** Dbld.  
 " 2, " 19, " **buolana** read **buoliana** Schff.  
 " 5, " 6, " recond read record.  
 " 11, " 1, " **rosaschreana** read **rosaochreana**.  
 " 11, " 32, " Lell read Zell.  
 " 16, " 43, " A. T. Brown read A. J. Brown.  
 " 22, " 3, " **circula** read **circulana**.  
 " 23, cancel lines 2 and 3.  
 " 31, " 39, " wnite read white.  
 " 31, " 43, " spade read shade.  
 " 38, " 25, " **distinctana** read **essexana**.  
 " 45, " 15, " Salidago read Solidago.  
 " 51, " 18, " **Epinotis** read **Epinotia**.